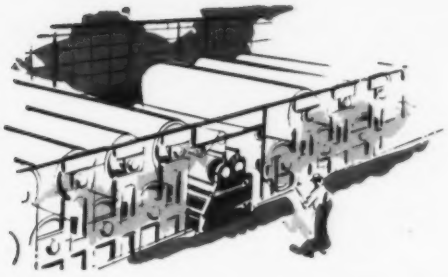
JUNE 8, 1959

PAPER TRADE JOURNAL

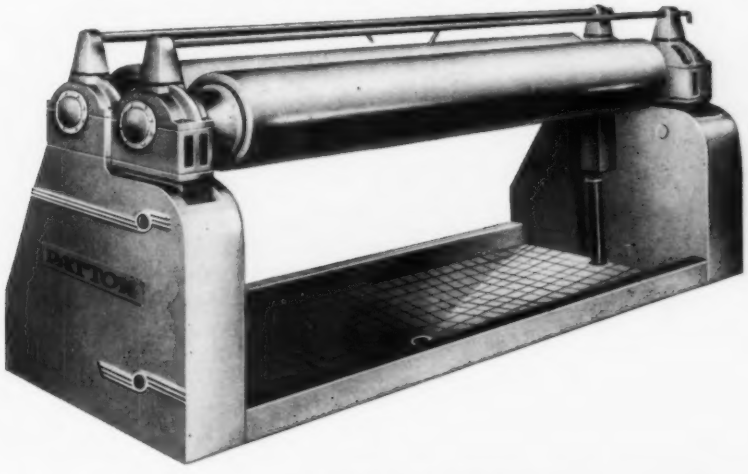
Newest Developments in Coating as Reported at Coating Conference

Future of Paperboard Through Better Planning

Industry Makes Progress In Atmospheric Pollution Control



HORIZONTAL SIZE PRESSES



by PATTON

THE PATTON MANUFACTURING CO., INC. · SPRINGFIELD, OHIO

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Best seller...1989

This acorn may grow to be a tree which will be the source of paper for a best-selling book. It is likely that the paper will bleach whiter, and *stay* whiter—thanks to hydrogen peroxide from Shell Chemical.

In chip-groundwood pulp bleaching, hydrogen peroxide gives high brightness plus markedly increased reversion resistance. For, unlike other bleaches, the *higher* you bleach with hydrogen peroxide, the *greater* the resistance to reversion.

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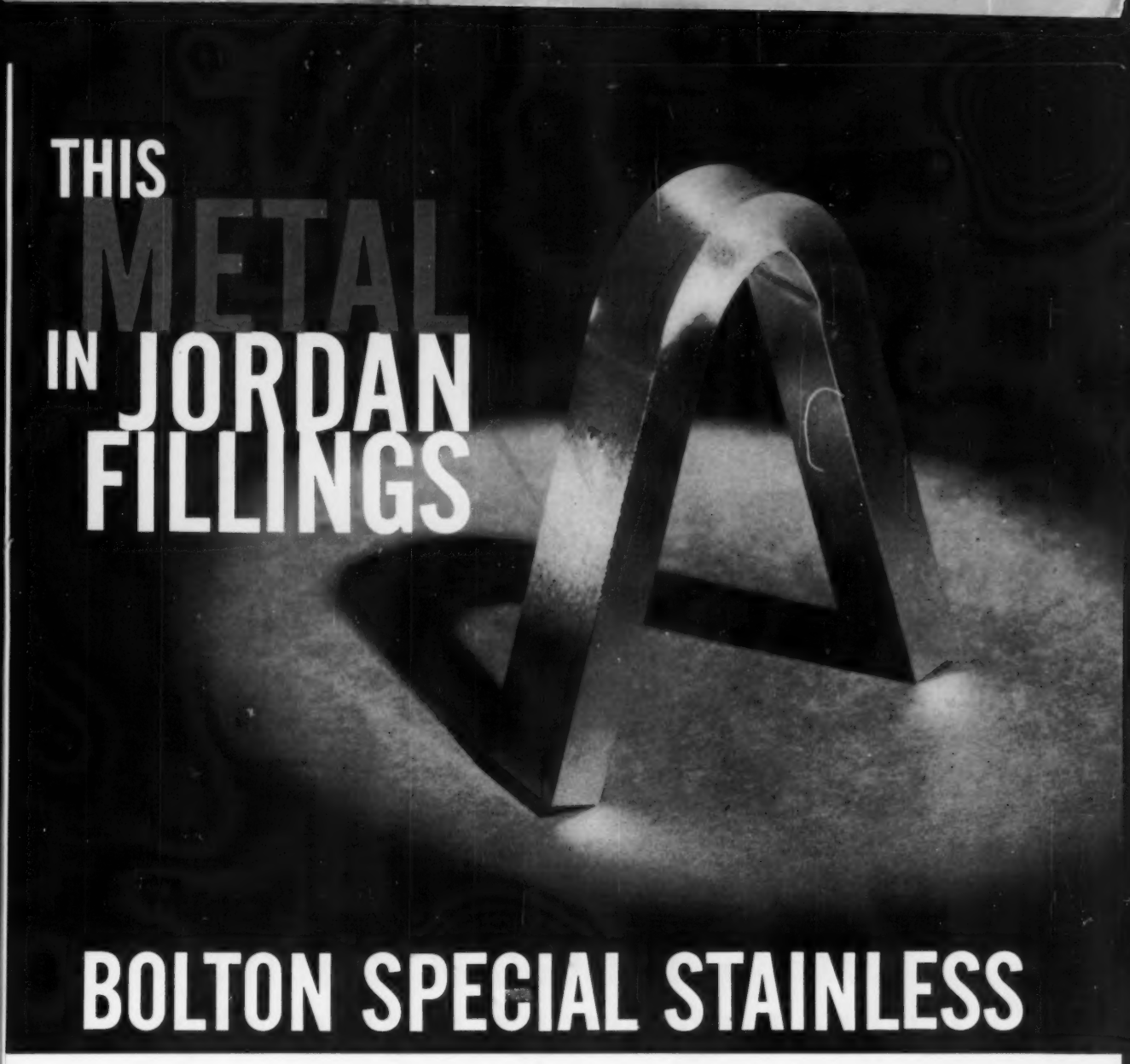

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. . . means more to papermakers than any steel developed in two decades

Its unique properties provide: absolute resistance to corrosion from chemicals normally encountered in refining equipment — protection of the cutting edges against wear and abrasion — toughness to withstand deformation without fracture — and the capacity to resist severe shock.

The need for a metal with th combination of mechanical properties has long been felt. Before the first shipments of Bolton Special Stainless were made in 1948, the choice was between wear resistance or corrosion resistance. Now, The Papermaker gets both, in addition to all other necessary properties.

Bolton Special Stainless is a chrome-nickel alloy having a chrome and nickel content approximating that in 300 series Stainless. It has made possible a form of heat-treating never before used commercially on steel for refining equipment. Known as precipitation hardening, this in-plant custom heat-treating gives the finished steel the unique character of being entirely free of stresses. This Bolton heat treatment makes it practicable to control the relationship of mechanical properties of the metal to meet the specialized requirements of paper mill refining operations.

Brinell Hardness	Tensile Strength (Average Minimum)	% Elongation (2")	% Reduction of Area
321	180,200	16.4	74.2
363	199,300	14.5	41.9
415	211,700	14.0	32.1

Various heat treatments for differing mill applications

It has taken years to prove this metal under all operating conditions. Now we have standardized our inventories on Bolton Special Stainless. We are proud to offer this premium quality stainless at no additional cost. Bolton Special Stainless is on hand in quantity to make prompt shipments to the growing number of papermakers *who have compared* — in all patterns, in all makes of Jordans. Don't wait. Try it now. *Call or write John W. Bolton & Sons, Inc., Lawrence, Massachusetts.*

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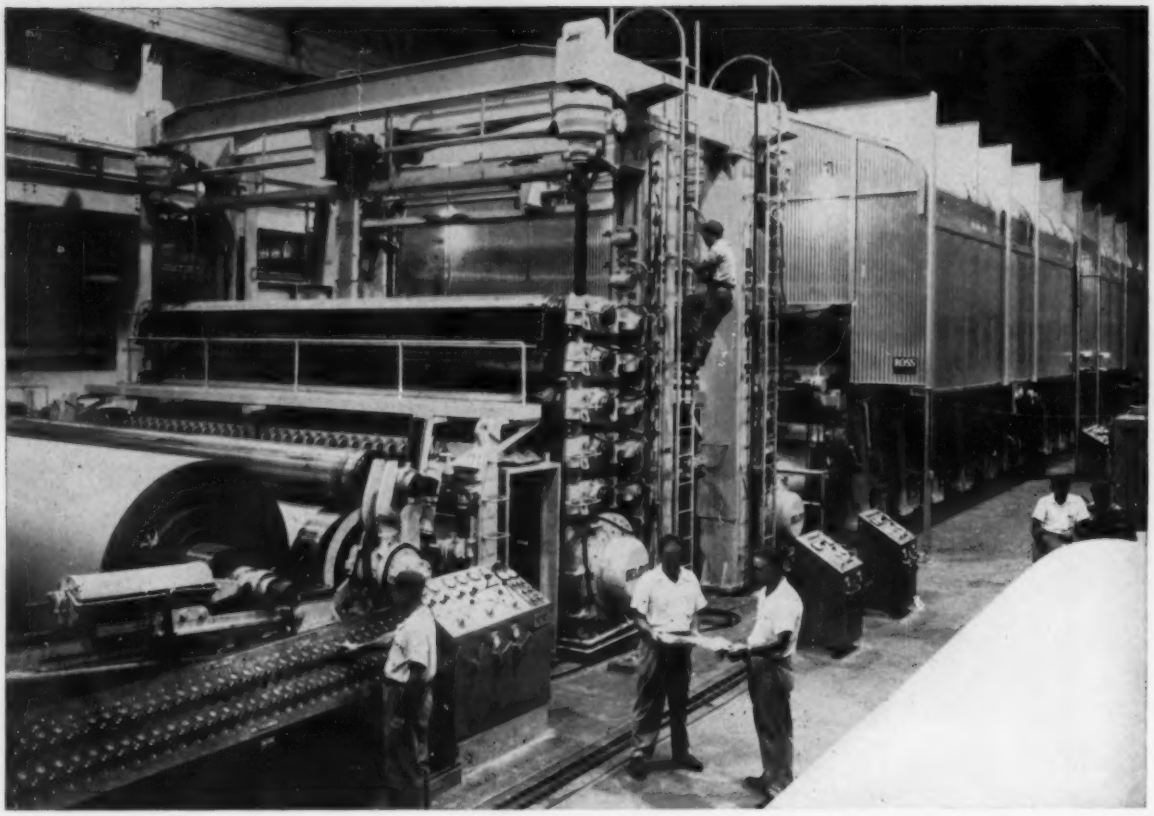

WEST VIRGINIA PULP AND PAPER CO. uses Texaco Paper Machine Oil HD in the circulating system and Meropa Lubricant #2 in the gear sets of this brand new $25,000,000 Beloit.

EVERY USER'S EXPERIENCE PROVES

Texaco lubrication assures longer uninterrupted production

Production lost through unexpected downtime can be a big item on the profit and loss statement. Conversely, every day *added* to the period between scheduled overhauls can add up to significant savings at the end of the year. That's why it's important to choose the best possible lubricants to insure optimum operation – Texaco Paper Machine Oil HD and Texaco Meropa Lubricant.

In the circulating systems, Texaco Paper Machine Oil HD separates readily from water, keeps bearings fully lubricated and protected against corrosion, whether the machine is running or idle. It keeps circulating lines clean by preventing accumulations of carbon, paper dust and sludge – and it withstands bearing temperatures as high as 300° F.

In gear drives, Texaco Meropa Lubricant assures smoother operation, longer life. It resists oxidation and thickening, is non-foaming and noncorrosive–does not separate, and stands up under severe temperature and moisture conditions.

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(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

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REMEMBER THESE DATES

June 17-20, Summer Meeting, Technical Section, C.P.P.A., Manoir Richelieu, Murray Bay, Que., Canada.

September 9-11, TAPPI Fundamental Research Conference, Institute of Paper Chemistry, Appleton, Wis.

September 21-23, Paper-Plastics Conference, Edgewater Beach Hotel, Chicago, Ill.

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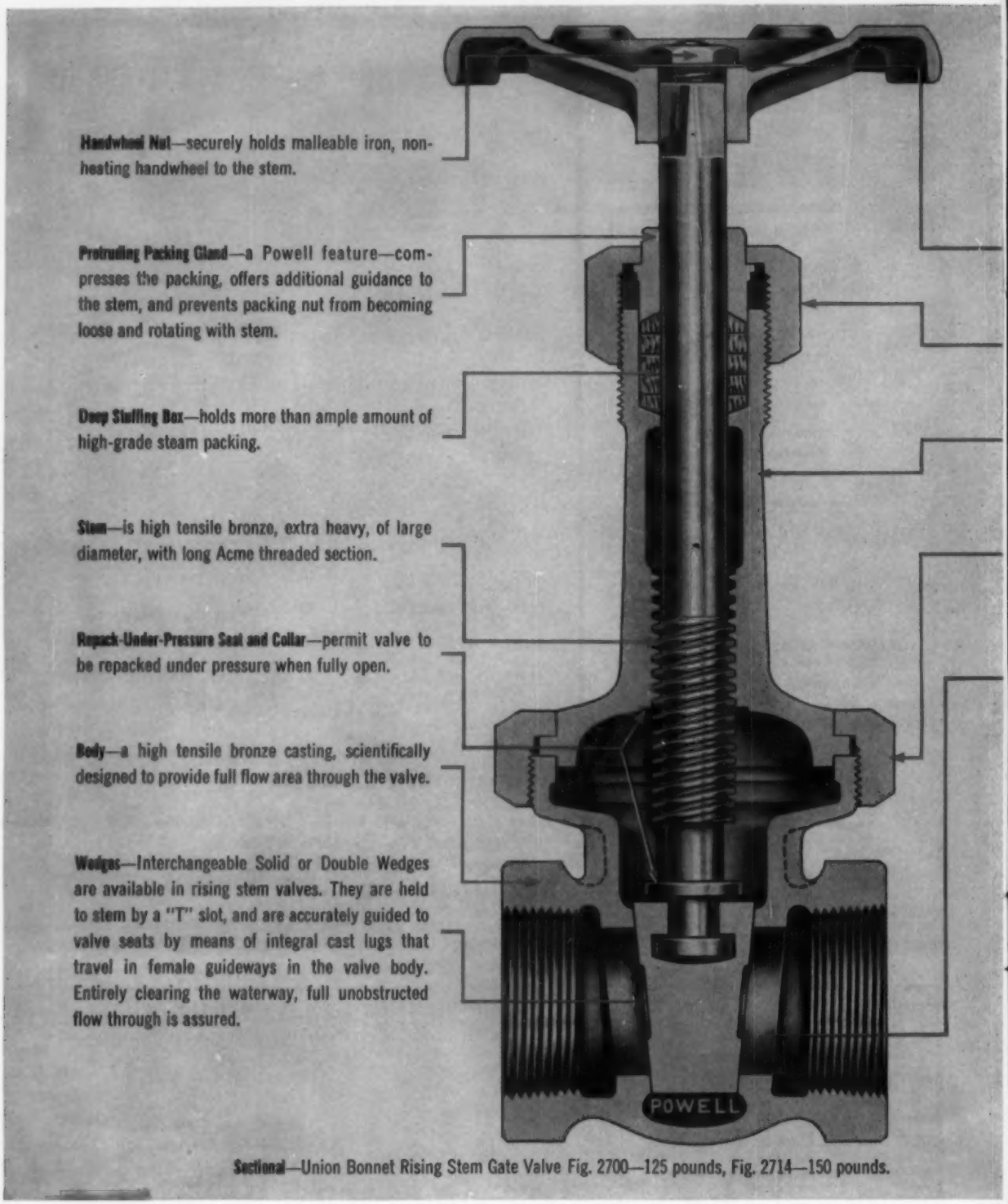
ANNOUNCING NEW **POWELL**


Handwheel Nut—securely holds malleable iron, non-heating handwheel to the stem.
Protruding Packing Gland—a Powell feature—compresses the packing, offers additional guidance to the stem, and prevents packing nut from becoming loose and rotating with stem.
Deep Stuffing Box—holds more than ample amount of high-grade steam packing.
Stem—is high tensile bronze, extra heavy, of large diameter, with long Acme threaded section.
Repack-Under-Pressure Seat and Collar—permit valve to be repacked under pressure when fully open.
Body—a high tensile bronze casting, scientifically designed to provide full flow area through the valve.
Wedges—Interchangeable Solid or Double Wedges are available in rising stem valves. They are held to stem by a "T" slot, and are accurately guided to valve seats by means of integral cast lugs that travel in female guideways in the valve body. Entirely clearing the waterway, full unobstructed flow through is assured.
POWELL

Sectional—Union Bonnet Rising Stem Gate Valve Fig. 2700—125 pounds, Fig. 2714—150 pounds.

POWELL...world's largest family of valves

BRONZE UNION BONNET GATE VALVES

for 125 and 150 pounds WSP

These new BRONZE Union Bonnet Gate Valves have many superior features—some of which are outlined here. For complete details, write for new illustrated circular. Or check with your nearest Powell Valve distributor.

Identification Plate—gives Figure Number and kind of valve.

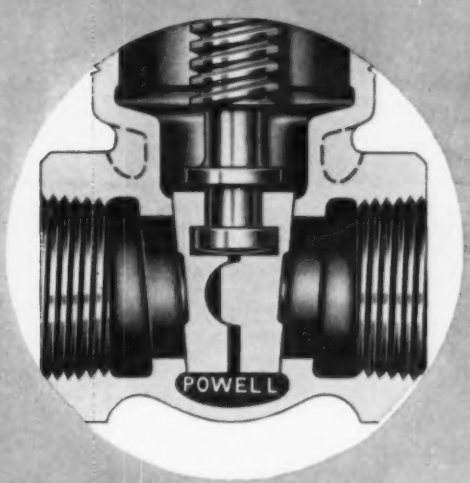
Heavy Hexagonal Packing Nut—for holding gland and adjusting packing.

Long Bonnet—cast of high tensile bronze for long service.

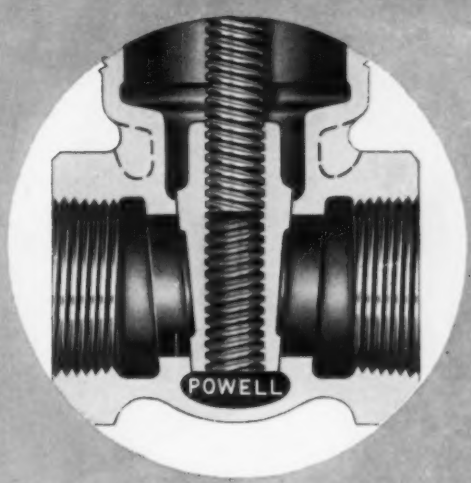
Octagonal Ring Nut—is deep threaded and tightly holds body-bonnet connection. Affords additional wrenching positions.

Ample Space—between seats and end of pipe thread prevents injury to seats when screwing pipe into the body.

Fig. 2707—125-pound Union Bonnet Non-Rising Stem Gate Valve. Also available for 150 pounds—Fig. 2712.



Detail of Sectional View Inside Screw Rising Stem Gate Valve showing Double Wedge Disc and Integral Seats.



Detail of Sectional View Non-Rising Stem Gate Valve showing Solid Wedge Disc that rises on stem. Integral Seats.

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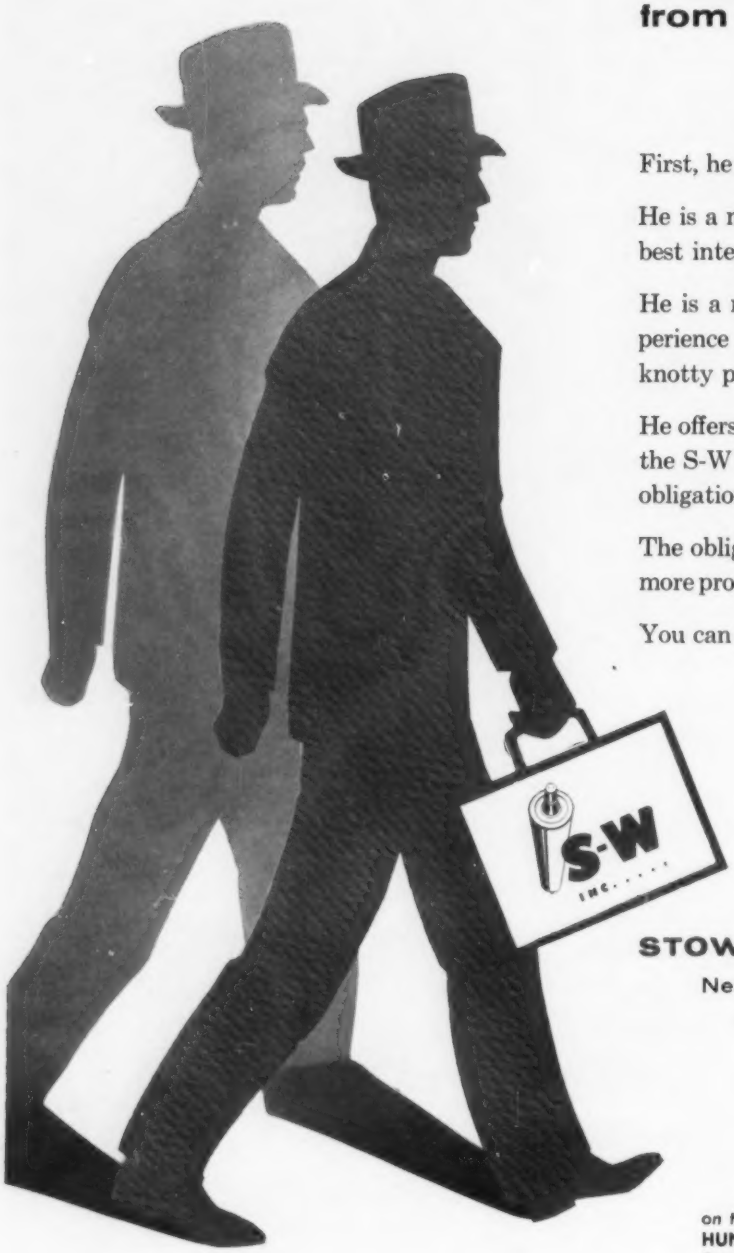
WHAT (you may ask) is a SALES ENGINEER from Stowe-Woodward?



First, he is a man.

He is a man who *always* places his customer's best interests ahead of his own.

He is a man with many years of *valuable* experience in using rubber-covered rolls to solve knotty processing and production problems.

He offers you his experience, plus the ability of the S-W Technical Service Department, at no obligation to you.

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You can reach him by calling S-W.

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Trends

Strauss Comments on General Business

Business activity is at a new high, substantially in excess of that reached at the peak in 1957 both in dollars and in real terms. Gross national product reached an annual rate in the first quarter of $467 billion. In constant dollars this was 8% above the low reached in the first quarter of last year, and 2% above the top quarter of 1957, reports Secretary of Commerce Strauss. Recent gains have been broadly based, with lagging segments joining the advance. Capital goods industries are showing increasing signs of revival. One serious lagging area is export sales.

Canadian Grades Show Rise in Production

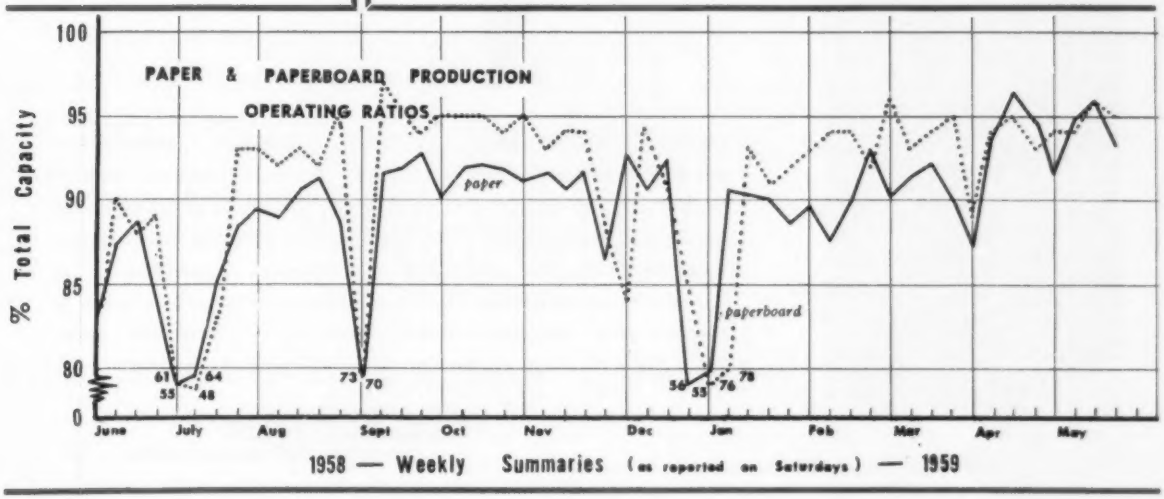
Canadian pulp production in the first four months of this year was almost 5% ahead of the same period in 1958, while exports were up nearly 14%. Canadian paperboard output was up 9% in the first third compared with last year. Output of fine paper was also up 9% in the same period.

Milk Cartons Output to Increase 7% in 1959

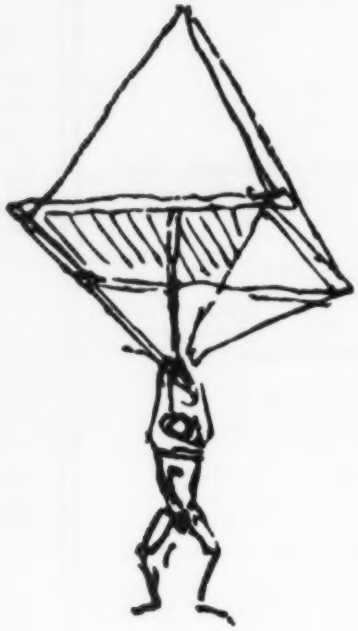
Production of paper milk containers will increase by 7% in 1959, according to American Can Co. predictions. Output should set a record of some 15 billion units this year, according to Canco. This represents nearly a billion increase over the estimated 14.03 billion units made in 1958. Use of the paper carton has grown steadily to a point where now more than half the nation's fluid milk goes to market in paper. The company stated that percentage-wise the fastest growing segment of the paper milk container business is in its use for citrus products.

Big Foil Lamination Growth Predicted

The Laminated Foil Manufacturers' Ass'n. recently completed a poll of its membership on the growth potential of this product. As a result, it is thought that use of aluminum foil combined with paper, board and films will show a 50% increase over the next five years. Improvements in laminating techniques and equipment along with the development of special foil laminating grades of film, paper and board are said to be making available a wide selection of lower cost, better performing packaging materials.



Leonardo da Vinci



LEONARDO DA VINCI—artist . . . architect . . . inventor . . . philosopher—was one of the world's most versatile men. Creator of countless immortal paintings, he also designed man's first flying machine. His genius expressed itself in many ways. ALBERTA HI-BRITE® bleached kraft pulp—endowed with properties of strength . . . formation . . . brightness . . . cleanliness . . . is the world's most **VERSATILE** pulp. Alone or in blended furnishes, it can help perfect the quality of nearly every grade of white paper made.

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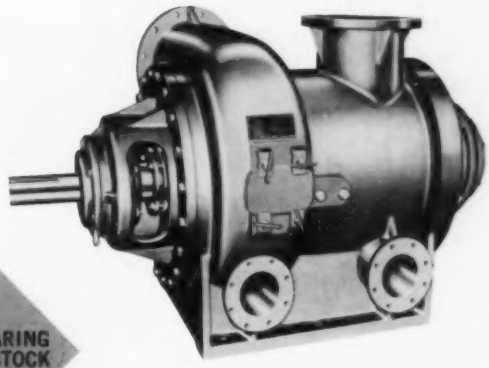
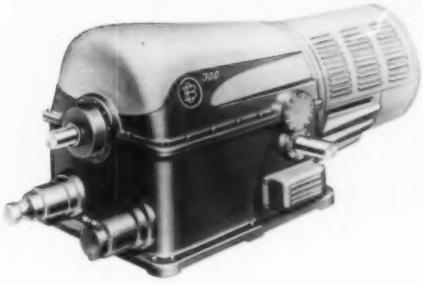


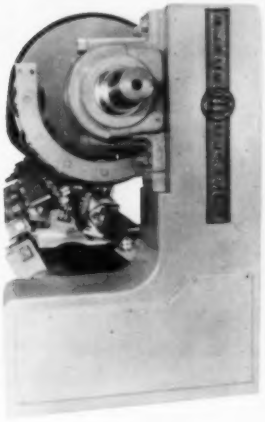
IN THE PULP MILL

PREPARING THE STOCK

FORMING THE SHEET

CONVERTING





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. . . boosting mill productivity with new, job-proved machinery developments

In the Pulp Mill. . . . high capacity **Selectifier® Screen** for use ahead of the washers on hot stock. Contact Pandia Division, Hamilton, Ohio.

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SHARTLE DIVISION STOCK PREPARATION EQUIPMENT

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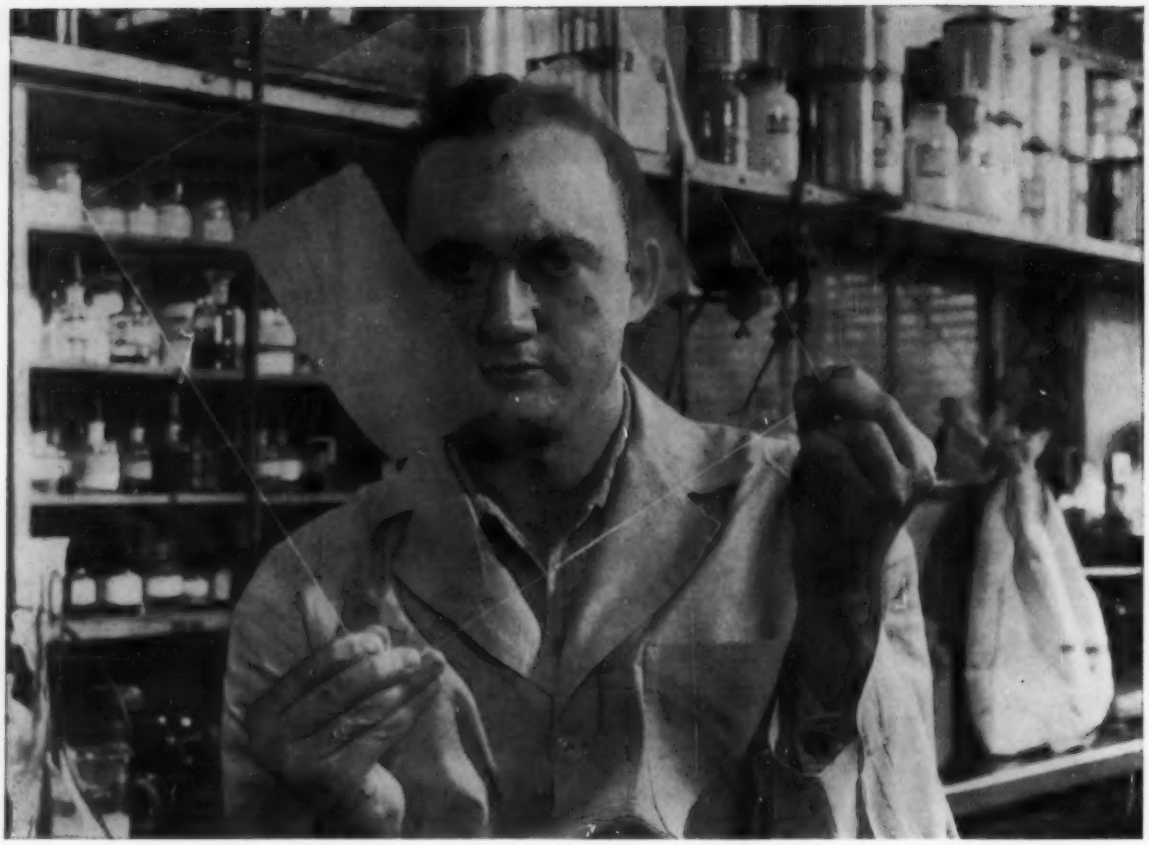

Smears of size on glass show clarity of Ten-O-Film, right, almost invisible, compared with conventional starch, left.

Sure way to CLEAR, UNIFORM COATING

The highest degree of coating quality can be achieved with the new, improved Ten-O-Film starches.

These new starches possess unexcelled clarity, uniformity and film-forming properties. They are available in a series of fluidities to meet your exact requirements. Because of their high degree of viscosity stability at high solids, Ten-O-Film starches reduce setback and maintain adhesive strength, assure good performance. At lower concentrations Ten-O-Film starches assure superb structural film continuity and excellent results.

For technical assistance in selecting the TEN-O-FILM starch best suited to your needs contact our nearest sales office or write direct.

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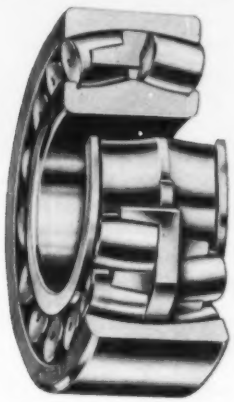
CORN PRODUCTS SALES COMPANY 17 BATTERY PLACE, NEW YORK 4, N.Y.

SKF engineering solves major bearing problems

NEW SCREEN BEARING OFFERS THE CAPACITY AND FATIGUE LIFE NEEDED TO BOOST VIBRATING SCREEN PRODUCTION

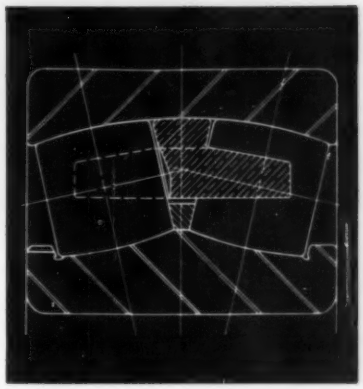
Designers and users of vibrating screens continually look for ways to increase operating capacity. Their requirements create a special bearing problem—because of the combination of high loads and eccentric motion to which the bearings are subjected.



This is the new SKF screen bearing, now being produced in the most widely-used sizes.

A new screen bearing, developed by SKF, solves the problem. This bearing has the long rollers and high capacity of the "C" type spherical roller bearing SKF introduced in 1953. *It provides 40% greater load-carrying capacity and 3 times longer fatigue life than previous types.* And its specially-designed cage withstands the high eccentric motion peculiar to vibrating screens.

This cage is made of centrifugally cast bronze and has axially drilled and reamed pockets of a shape closely conforming to that of the rollers. Its spherical OD conforms to the contour of the outer ring sphere. This provides greater cage contact area, thereby reducing the unit stresses. It also eliminates lubrication problems as the cage is supported in the outer ring's spherical surface where ample lubrication is available. This cage is symmetrical and one piece construction assures dynamic stability. 5911



Drawing shows long rollers and close relative conformity of roller contour to ring contour in screen bearing design.

The new bearing is interchangeable with SKF 223 Series bearings used on screens in mines, quarries, steel mills, chemical and paper plants. For full details, write or call the nearest SKF distributor, sales office or SKF Industries, Inc., Philadelphia 32, Pa.

Spherical, Cylindrical, Ball, "Tyson" Tapered and REED Miniature Bearings

EVERY TYPE—EVERY USE

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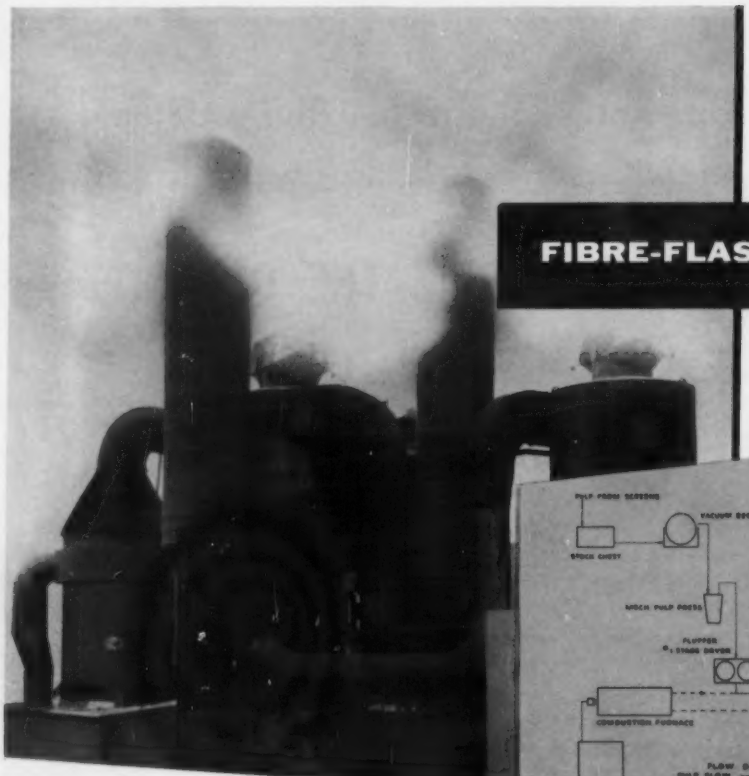
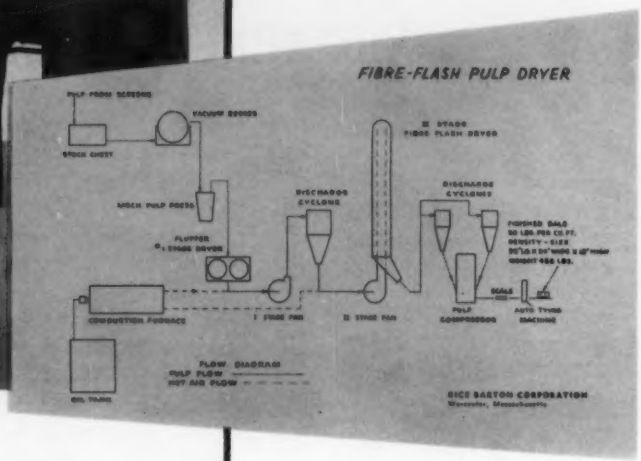


For Pulp Drying . . .

The Rice Barton

FIBRE-FLASH DRYING SYSTEM



The "Fibre-Flash" drying process for use with all types of pulp consists of dewatering the pulp, fiberizing the concentrated pulp material thoroughly to insure uniform drying, evaporation of the fiber-bound water to the required degree of dryness and baling or bulking the material into convenient form for storage or shipment.

The drying medium, either combustion gases or hot air, carries the material to be dried through separate stages of the fiber-suspension-type flash dryer. The relatively high intake temperature flashes-off the surface water and the drying tower provides the necessary time element to permit a complete heat exchange to extract the remaining moisture in the fibers. Drying occurs at high evaporation velocity which maintains a low fiber temperature.

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Minimum capital investment and operating cost.

Peak thermal efficiency.

Reduced labor costs.

Simplicity of equipment with moving parts at a minimum.

Elimination of over-heating or case-hardening effect.

Ease of re-pulping.

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Paper Machinery Builders Since 1837

PAPER TRADE JOURNAL

WEEK OF JUNE 8, 1959

West Virginia Sells Out Majority Interest in H&D of Canada

West Virginia Pulp & Paper Co. has announced that it has sold its majority stock interest in the Hinde & Dauch Paper Co. of Canada, Ltd., to St. Lawrence Corp. for an undisclosed amount of cash. The transaction involves the transfer of 189,864 shares of common stock, representing 52.74 per cent of the 360,000 shares of H&D of Canada, Ltd., common stock outstanding.

West Virginia obtained its interest in H&D of Canada in 1953, when it acquired the American parent company, the Hinde & Dauch Paper Co. of Sandusky, Ohio, through an exchange of stock. This transaction will have no bearing on West Virginia's operations in the corrugated box field in the U. S., where further expansion is planned.

Mr. Luke pointed out that H&D of Canada had grown since 1953 to a point where the company would have to make substantial new investments for the expansion of its paperboard productive capacity in order to supply its requirements. Since there already exists an excess of Canadian paperboard capacity, any additional primary manufacturing facilities introduced by H&D of Canada would compound the present oversupply.

On the other hand, St. Lawrence Corp., which has hitherto occupied a non-integrated position in the Canadian industry, was interested in acquiring a relationship with an established box-making operation to take its product to market.

For West Virginia the St. Lawrence offer is attractive because the net cash realized from the sale can be more profitably invested in adding to the company's domestic operations.

Headquartered in Toronto, H&D operates three paperboard mills with an annual capacity of 115,000 tons of containerboard and boxboard, part of which is marketed. The company's eight converting plants, located throughout Canada, consumed about 120,000 tons of paperboard last year.

St. Lawrence Corp. operates four mills with a total annual capacity of more than a half million tons of paper and paperboard. Shipping case materials account for about 20 per cent of its production and boxboard for packaging about three per cent. Nearly 70 per cent of St. Lawrence's output is newsprint.

H&D of Canada has been a large containerboard customer of St. Lawrence for about 25 years.

Hammermill to Acquire Beckett Paper

William Beckett, president of the Beckett Paper Co., located at Hamilton, Ohio, and Donald S. Leslie, president of Hammermill Paper Co., with head offices at Erie, Pa., have announced that the holders of more than 80 per cent of the common stock of The Beckett Paper Co. will accept an offer by Hammermill Paper Co. to issue up to 112,750 shares of Hammermill common stock in exchange for Beckett common stock.

The Beckett Paper Co., founded more than a century ago, has a present paper manufacturing capacity of approximately 30,000 tons per year which will be increased in July of this year when a major rebuild of a present machine will be completed.

Distribution of Beckett papers is made through leading independent paper merchants located in major markets throughout the United States. The present sales policies and merchant relationships of The Beckett Paper Co. will be unaffected by the change in ownership. Beckett will continue to operate under its present management which includes Guy H. Beckett as chairman of the board and William Beckett as president of the company.

Canada Reports April Production Gain

Canadian paperboard production gained in April and the first four months of the year.

Output for the month was 69,086 tons, up from 67,864 tons a year ago. To the end of April, production totalled 283,362 tons as compared with 260,161 tons in 1958.

Paperboard exports totalled 5,148 tons in April, off from 7,903 tons last year. Domestic shipments for the month totalled 62,547 tons as against 61,373 tons in 1958.

Shipments to Canadian users in the four-month period were 255,331 tons and exports were 21,609 tons as compared with 231,121 tons and 24,421 tons for the same period in 1958.

WOODPULP

Canadian woodpulp production was ahead in April and the first four months of the year.

April output totalled 892,092 tons, up from 838,189 tons a year ago. Domestic consumption, used largely in the production of paper and board, was also ahead at 683,789 tons as compared with 652,823 tons in 1958. Exports for the month gained at 202,074 tons as against 191,026 tons last year.

In the first four months, exports gained substantially at 753,078 tons as compared with 662,688 tons a year ago. Output was ahead at 3,370,588 tons, up from 3,222,067 tons in 1958 while domestic consumption for the period was 2,580,520 tons this year as against 2,517,820 tons last year.

FINE PAPER

Canadian fine paper production totalled 24,825 tons in April, an increase of 10.4 per cent from the year ago figure of 22,491 tons. In the first four months, output was up 9.3 per cent at 93,374 tons as against 85,463 tons in the same period last year.

Fine paper shipments were also ahead during the month at 24,239 tons, up from 21,380 tons in 1958. Included in this year's total were exports of 1,490 tons and domestic shipments of 22,749 tons. In April 1958, 1,215 tons were shipped abroad

and 20,165 tons to Canadian consumers. Exports in the first four months were 5,350 tons, as against 5,106 tons last year. Total shipments for the period were 91,633 tons as against 85,541 tons in 1958.

Coated paper output in April was 3,131 tons as compared with 2,633 tons a year ago. Shipments for the month were 2,947 tons this year and 2,486 tons in 1958. For the first four months, coated paper production totalled 11,160 tons and shipments 10,750 tons. In 1958 production was 9,775 tons and shipments were 9,727 tons.

Stone & Webster to Design Georgia-Pacific Expansion

Stone & Webster Engineering Corp. has been named to provide the engineering design for the expansion of the Georgia-Pacific Co. pulp and paper mill at Toledo, Ore.

As previously announced by Georgia-Pacific Paper Co., expansion of the Toledo, Ore., mill, completed in 1958, will virtually double its production capacity by bringing daily output to a total of 605 tons of pulp and paper. The Toledo project is part of Georgia-Pacific's extensive expansion program which includes the construction of a new pulp and paper mill at Samoa, Cal., scheduled for completion in 1962.

Stone & Webster, one of the world's largest engineering and construction organizations, has worked on the design or construction of pulp and paper facilities for Abitibi Corp., Great Northern Paper Co., Marathon Paper Mills, New Brunswick Pulp & Paper Co., Scott Paper Co. and others.

N. A. Newsprint Shows Small Gains

Production of newsprint in North America during April 1959 amounted to 695,830 tons and was 3.7 per cent above the April 1958 volume. Shipments totaled 746,137 tons in April 1959 and were 9.4 per cent greater than shipments in the corresponding month of 1958. According to the Newsprint Service Bureau, output in the United States was 161,250 tons and shipments were 168,632 tons, and respective gains over April 1958 amounted to 8.5 per cent and 13.0 per cent. Canadian production amounted to 534,580 tons and shipments totaled 577,505 tons, which represents increases from April 1958 of 2.3 per cent and 8.4 per cent respectively.

Production of newsprint in North America in the first four months of 1959 amounted to 2,641,821 tons, which was 31,008 tons or 1.2 per cent above the level attained in the same period of 1958. Cumulative output of United States mills at the end of April 1959 totaled 638,265 tons and was 43,890 tons or 7.4 per cent more than the volume produced a year earlier. Canadian production amounted to 2,003,556 tons and was 12,882 tons or 0.6 per cent lower than in the first four months of 1958.

Paper and Board Production

According to the American Paper and Pulp Ass'n., the ratio of the United States production to mill capacity for the week ending May 23, 1959, was 93.3 per cent compared with 97.2 per cent revised for the preceding week. The ratio was 85.7 per cent for the corresponding week a year ago.

The paperboard production ratio for the week ending May 23, 1959, was 95 per cent compared with 96 per cent for the preceding week and 85 per cent for the corresponding week a year ago.

(Detailed statistics on page 56)

Beloit To Build Illinois Plant

Beloit Iron Works plans to start construction of new plant facilities near Rockton, Ill. This is located just over the Wisconsin state line a few miles from the company's main plant at Beloit, Wis.

First unit of the million dollar project will be a fabricating shop for heavy items.

Plans for future construction on the Illinois site include a pipe and roll shop, a pipe storage facility and a sheet metal shop.

Fire Destsoys Paper Machine at E. B. Eddy

A fire destroyed a paper machine and damaged a building at the E. B. Eddy Paper Co. mill in Hull, Que., last week.

Fire department investigators say they have not been able to establish the cause. The half-hour fire broke out near the machine's motors as it was in operation. Flames shot through the roof above before being brought under control.

New Paper Stock Standards And Practices Set Up

New Paper Stock Standards and Practices, issued by the Paper Stock Institute of America, National Association of Waste Material Dealers, went into effect June 1st, 1959.

The basic changes number 24 in all, and were made to bring the Paper Stock Standards and Practices more into reality with current business operations and procedures. The previous revision was done in 1954.

The classifications for "#2—Manila Papers" and "Mixed Books and Magazines" have been eliminated from the new standards, to be known as PS-59. One addition was made, to the now 24 grade classifications, which will be called, "Printed Bleached Kraft Cuttings."

The 24 changes in PS-59 deal not only with grade definitions, but also with the purchase agreement, fulfillments by the seller and miscellaneous trade practices.

Copies of the new PS-59 specifications were mailed to the trade, from the National Ass'n of Waste Material Dealers national offices, 271 Madison Avenue, New York 16, N. Y.

New I.P. Asst. Treasurer

John T. Peninger has been appointed assistant treasurer of International Paper Co. Mr. Peninger joined the Woodlands Division in Bastrop, La., 27 years ago as an accounting clerk. Subsequently he served in the accounting department and as agent at several Southern Kraft Division mills.

In 1954 he was named manager of accounts for the Southern Kraft Division and in 1955 he was transferred to New York as assistant to the auditor. He was named assistant to the treasurer in 1958.

Wayne Brown Dies

Wayne A. Brown, 63, a vice president of the Crown Zellerbach Corp. and head of its Eastern division, died May 26th. He was a former president of the Kraft Paper Association, the Sulphite Paper Manufacturers Association, the Tissue Association and Paper Bag Institute.

Mr. Brown was a member of the executive committees of the American Paper and Pulp Association, Specialty Paper & Board Affiliates, the U. S. Pulp Producers Association, the Napkin Association and the Paper Shipping Sack Manufacturers Association.

KEEP THAT FELT IN PERFECT CONDITION NO MATTER HOW FAST IT TRAVELS—

You name the felt width and speed. The Vickery Conditioner keeps it uniformly clean, open and porous.

The faster the felt speed, the greater the net return on your investment in Conditioners. No more slow-downs or shutdowns for felt washups. Many users report substantially longer felt life, improved paper finish, elimination of felt marks, savings in steam because most moisture is removed at the presses instead of at the dryers.

Modern traveling header design makes the Conditioner a self-contained unit with no outside hoses, no header projections beyond the paper machine frame. Modern hydraulic drive permits operation at optimum speed.

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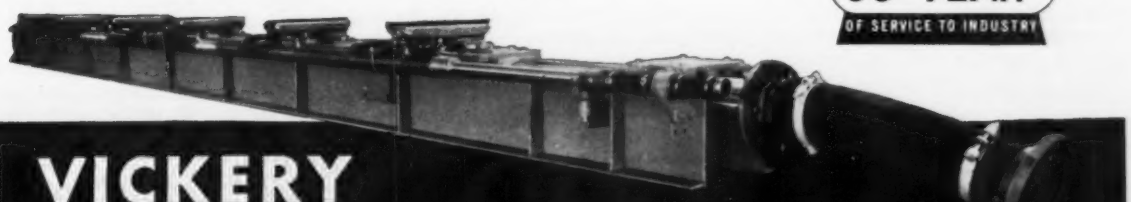


VICKERY FELT CONDITIONERS

PAPER PEOPLE

W. H. Aiken

R. D. Williams

Diamond Gardner Announces Promotions

Diamond Gardner Corp. has announced three major promotions.

William H. Aiken, has been appointed director of research and development for the corporation. His office will remain in Middletown, but he will be engaged entirely in corporate research projects. Mr. Aiken joined Gardner in 1952 as technical director. In 1958 he was promoted to director of research and development, paperboard products.

Richard D. Williams has been named director of industrial and public relations. In his new post, he becomes a member of The Gardner Division's operations committee.

Mr. Williams joined Gardner in 1949 as a personnel clerk. That same year he was named administrative assistant, industrial relations. In 1950 he was promoted to assistant to the supervisor of industrial relations, Middletown. He became supervisor of wage and salary administration in 1953, and two years later was promoted to coordinator of personnel development. In 1956 he was appointed supervisor of industrial relations for the company's Lockland operations and promoted to director of industrial relations for The Gardner Division in 1957.

Thomas G. Zentner has been appointed director of research and development, The Gardner Division. Mr. Zentner's first job with Gardner was as a mill technician in 1952. A year later he was promoted to technical supervisor in the Lockland carton plant. He became assistant technical director, carton plant development, in 1956.

T. G. Zentner

AND Announces Additional Staff Changes

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Nfld., announces the following additional staff changes and promotions:

V. F. Stapleton, superintendent of design and estimating, to the position of assistant chief engineer, replacing W. L. Hirst;

W. L. Hirst to the position of general superintendent, maintenance and services, replacing R. Brown;

J. F. Molloy to sulphite superintendent;

C. R. Hanson to assistant sulphite superintendent; and

J. A. Ryan to assistant paper mill superintendent.

J. Blackmore, assistant paper mill superintendent, will continue to replace the superintendent during his absence, and devote his main attentions to the two large machines, Nos. six and seven. Mr. Ryan will devote his time to machines Nos. one to five and will replace Mr. Blackmore during his absence. C. Down will replace Mr. Ryan during his absence.

Henderson Joins Monadnock Paper Mills

Kenneth W. Henderson has been appointed sales promotion manager, Monadnock Paper Mills, Inc., Bennington, N. H., effective immediately. Mr. Henderson has just completed his ninth year with Eastern Corp. during which time he served as advertising manager, New York City co-district manager responsible for all merchant sales, and, most recently, district sales manager, New England. Following two years in Naval Radar, he was advertising and sales promotion manager for two divisions of Inter-Chemical Corp. He is a member of the Salesmen's Association of the Paper Industry, and the Boston Paper Trade Association.

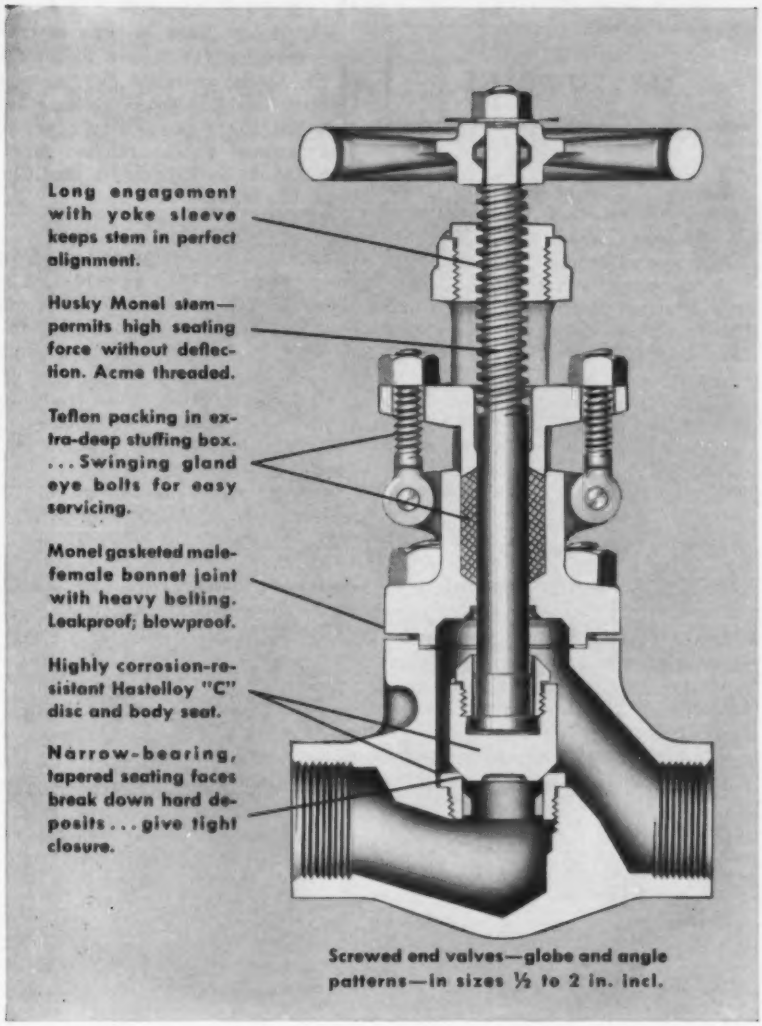
St. Croix Names Hutchins To Executive Post

St. Croix Paper Co. announces that Curtis M. Hutchins was made chairman of the executive committee and chairman of the operating committee. He is a former president of Bangor & Aroostook Railroad Co., is chairman of the Dead River Co., Bangor, and a director of Scott Paper Co.

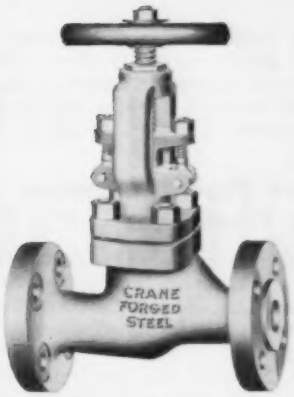
Rayonier Promotes Hiley

Howard W. Hiley, formerly assistant manager of industrial relations for Rayonier Incorporated, has been promoted to manager of the Northwest Industrial Relations division.

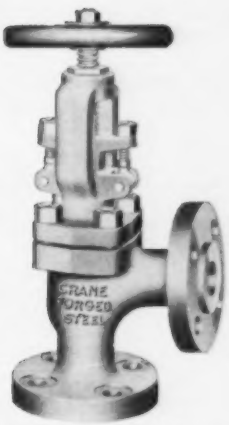
A native of Washington, Mr. Hiley joined Rayonier in August 1934 upon graduation from Grays Harbor College. After holding various positions at the Grays Harbor (Hoquiam, Wash.) division, Mr. Hiley was named assistant personnel manager and safety supervisor of that mill in 1942. Two years later he was appointed personnel manager for Grays


Long engagement with yoke sleeve keeps stem in perfect alignment.
Husky Monel stem—permits high seating force without deflection. Acme threaded.
Teflon packing in extra-deep stuffing box. ... Swinging gland eye bolts for easy servicing.
Monel gasketed male-female bonnet joint with heavy bolting. Leakproof; blowproof.
Highly corrosion-resistant Hastelloy "C" disc and body seat.
Narrow-bearing, tapered seating faces break down hard deposits ... give tight closure.

Screwed end valves—globe and angle patterns—in sizes ½ to 2 in. incl.



Flanged end globe valve—in sizes ½ to 6 in. incl.



Flanged end angle valve—in sizes ½ to 2 in. incl.

NEW! Crane chlorine valves now in sizes up to 6 in.

Performance-proved over many years in sizes up to 2 in., these *engineered-for-chlorine* valves are now available in larger sizes with flanged ends—2½, 3, 4 and 6 in.

Many features put these valves head and shoulders above any other for gas or liquid chlorine handling. There's extra strength where needed in the steel body and integral bonnet and yoke. The bonnet joint is gasketed with Monel and heavily bolted; it's leakproof and blowproof. A deep stuffing box with Teflon V-ring packing insures long-life stem seal.

Disc and body seat ring are Hastelloy "C" for tight seating with high corrosion resistance. Narrow-bearing, 45-degree taper seating design and the husky Monel stem easily break down any hard deposits on seat faces.

Choose these valves for all water-free chlorine gas or liquid services up to 300 F. They're ideal for chlorinating lines in chemical processing and bleaching, treatment of water and sewage, etc. Get complete specifications from your Crane Representative or write to address below.

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PIPE • PLUMBING • HEATING • AIR CONDITIONING

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Harbor division while still responsible for safety activities there. He was named assistant manager of industrial relations for the company in July 1954.

Dryden Paper Announces Three Promotions

J. W. Wing, vice president and general manager of the Dryden Paper Co., Ltd., has announced the following appointments effective immediately:

D. H. Maunsell who has been mill manager since 1950, will be assistant to the vice president and general manager. In his new position he will be assisting in research and development plans for expansion of the company, both in production capacity and in new types and kinds of products.

T. S. Jones, manager of industrial relations since 1955, will be mill manager.

N. I. Howe, general superintendent since 1955, will be production manager.

Morris from Great Northern To Bloomer

Monroe O. Morris has been appointed assistant to the paper mill manager at the Bloomer Bros. plant at Newark, N. Y. A graduate in pulp and paper technology from the University of Maine, Mr. Morris has been employed in various capacities at the East Millinocket mill of Great Northern Paper Co.

Larson Joins Wausau

John J. M. Larson, advertising and sales promotion manager of Crystal Tissue Co., has been appointed to a like post with the Wausau Paper Mills Co., Brokaw, Wis.

He will assume his new duties with Wausau June 1st.

Keyes Fibre Elects Abbott Treasurer

Carroll W. Abbott was elected treasurer of Keyes Fibre Co. by the board of directors.

Mr. Abbott joined this company in 1951 and has served as assistant treasurer since March 1955. As treasurer he fills the vacancy caused by the death of John W. Thomas on May 6th this year.

Mr. Abbott is a graduate of Colby College, Harvard University Graduate School of Business Administration. He is a certified public accountant and a member of the Maine Bar.

OBITUARIES

Edward A. Johnston, 57, treasurer of Minnesota & Ontario Paper Co. (Mando), died May 23rd. Mr. Johnston had been ill since Easter.

A Minneapolis native, Mr. Johnston attended North high school and University of Minnesota. He joined Mando in 1933 as office manager at International Falls.

The following year he returned to Minneapolis headquarters and served successively as office manager, chief accountant, assistant comptroller and comptroller. He was elected treasurer in 1955.

Prior to joining the paper company he was associated with Ford Motor Co.

Lyall Tracy, 65, industrial relations manager for Rayonier, Inc., died May 29th, at his summer home. Mr. Tracy, for many years a leading figure in the Northwest pulp and paper industry, began his career in the pulp and paper industry in 1922 as office manager for the former Washington Pulp & Paper Co. of Port Angeles, Wash. He later became assistant manager for this firm.

In 1927 Mr. Tracy joined Rayonier serving first as office manager for the Grays Harbor division, later as assistant manager, and then as resident manager for the division.

In 1947 he was appointed industrial relations manager for Rayonier with corporate-wide responsibility. He served in this capacity until his death.

John K. Ferguson, 35, assistant vice president of the St. Regis Paper Co. in Pensacola, Fla., died May 27th in a Pensacola hospital following surgery. He was the son of Roy K. Ferguson, chairman of the board of directors for the St. Regis Paper Co.

Mr. Ferguson joined St. Regis in 1947 and was appointed resident manager at the company's kraft mill in Jacksonville in November 1950. This appointment followed service at the kraft center in Pensacola and at the St. Regis Southern Woodlands Division at Fargo, Ga.

Clarence F. Buckley, a veteran in the corrugated box industry, died at his home in Overland Park, Kans., May 4th. He had charge of the Kansas City sales office of Hoerner Boxes, Inc., from March 1, 1953, until the time of his death.

For many years he was district sales manager for Scharff Koken Co. in St. Louis, until its merger with International Paper Co. He then managed the Kansas City plant of International Paper and had supervision of its Springhill, La., and Chicago, Ill., plants.

Andrew George Spiegelhalter, 75, who retired in 1953 as president of Pusey & Jones Corp., Wilmington, Del., because of a heart illness, died on May 25th at his home in Ocean City, N. J.

Mr. Spiegelhalter rose from apprentice machinist to top official during more than 50 years in the company.

He was named a member of the board of directors and general manager of the entire corporation in 1930, becoming president in 1939. At that time, the firm was specializing in machinery for papermaking as well as for shipbuilding.

George L. Witham, salesman with The Orr Felt & Blanket Co., died on May 19th. Mr. Witham suffered a heart attack on May 1st and seemed to be progressing satisfactorily until the second fatal attack on May 19th. He had been Orr's representative in the South Central part of the United States since December of 1945.

Thomas N. Carter, 56, special design engineer with The Champion Paper and Fibre Co., Hamilton, Ohio, died May 9th. Prior to joining Champion in 1953 as technical advisor to the general production manager, he had been director of engineering for the Cameron Machine Co. and did special engineering and converting machinery development for Bagley Sewell Co.

Arnold Gibson Bennett, vice president and general manager of the paper container division of Continental Can Co. of Canada, Ltd., died at his Clarkson home.

Born in Vienna, Ont., Mr. Bennett received his education in London, Ont., and joined the firm in 1944.

Joseph D. Crump, 65, president of Semmes Bag Co. of Memphis, died in a hospital in Memphis on May 26th.

Mr. Crump, a native of Memphis, organized the firm in 1946 in partnership with the late Thomas A. Semmes. He was executive vice president until Mr. Semmes' retirement in 1956 when he became president.

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research begins in your mill

1 *An Albany Felt sales engineer helps a customer get to the root of a basic problem.*

2 *In Albany's chemical research laboratory, Harold Hedberg, VP/Research and Development, inaugurates work on a project brought in from the field. In addition to this research center, Albany Felt Company maintains an advanced mechanical research laboratory, research facilities at St. Stephen, S.C., North Monmouth, Me., and Cowansville, Quebec, and a fellowship at a world renowned research institute.*

It's at the paper mill that felt research pays off.

It begins with the Albany Felt sales or service engineer who consults with you and then relays the facts to our team of experienced designers and laboratory specialists.

This is the team that first discovered and developed the use of synthetics and chemical treatments which solve many of your critical felt problems. Working on your present requirements, they can help achieve fast, trouble-free performance.

Remember—the felts, treatments and techniques that will break tomorrow's production records are now passing their final tests "under wraps" in our testing laboratories.

Call in your Albany Felt sales engineer. Let him *show* you how Albany's research team can help you get more tons per day—more days per felt.

3 *End result of applied research—fast, trouble-free performance!*

AF

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OTHER PLANTS: HOOSICK FALLS, N.Y., N. MONMOUTH, ME., ST. STEPHEN, S.C.; COWANSVILLE, P.Q.

NEW IDEAS FOR BETTER PAPERMAKING—FROM THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS

No. 1 and No. 2 Paper Machines at

NICOLET PAPER CORPORATION
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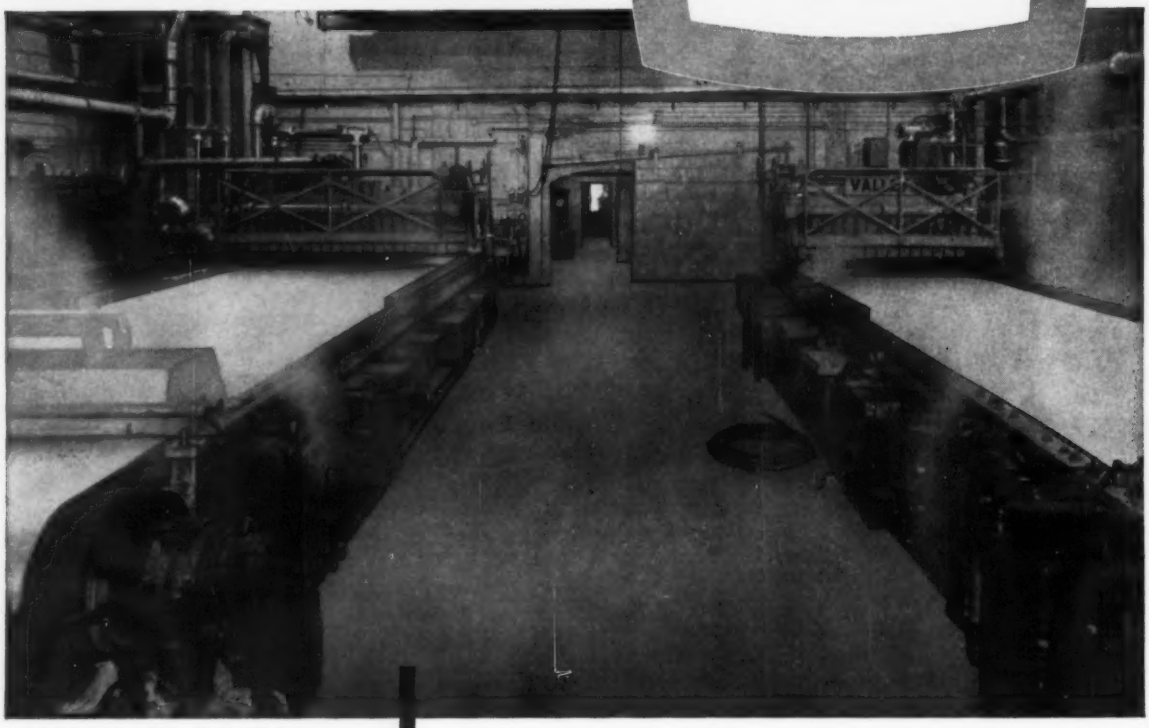

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For information of any nature pertaining to improving your paper-making machinery, write —

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NEW IDEAS FOR BETTER PAPERMAKING—FROM THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS

PJT NEWS OF CONVERTERS

ARTHUR A. CHECCHI, (second from right), assistant to the Deputy Commissioner of the Food and Drug Administration, interpreted the new Food Additives Amendment to the Federal Food and Drug and Cosmetic Act in a major talk before the 26th annual meeting of the National Fibre Can and Tube Ass'n. With Mr. Checchi are (left to right) W. F. J. Fienup, treasurer, R. C. Can Co., St. Louis, Mo.; Martin H Stark, outgoing association president and president of Arrow Paper Products Co., Saginaw, Mich.; and George R. Browner, assistant vice president of Mead Board Sales, of Lynchburg, Va., and newly elected association president.

American Can Names Tampa Plant Manager

The appointment of H. G. Smith, as manager of American Can Co.'s Tampa box plant, has been announced.

Mr. Smith started with the company in 1927 at the Fairport, N. Y., plant where he held various management positions. In 1947 he was appointed manager of Canco's Portland, Me., plant which position he held until his new appointment.

Federal Envelope Promotes McCabe

Thomas F. McCabe, has been made manager of the Federal Envelope Co. Denver plant, succeeding Richard A. Schafer, who has been named manager of the Carpenter Paper Co. plant in Omaha. Federal is a Carpenter subsidiary which operates plants in Denver and six other cities. Mr. McCabe has served the firm more than eight years and previously was sales manager two years.

Spartanburg Box Plant Executives Named

Three executives of the Spartanburg Box Plant of Union Bag-Camp Paper Corp., which is expected to begin operations the latter part of the year, have been announced.

The manager of the new plant will be R. C. Hutcheson, presently located in Savannah as assistant to the manager of box factories; Frank B. Grimes, now located in Savannah as assistant sales manager of the Savannah operation, will be sales manager of the Spartanburg plant; and Paul H. Olund, now supervisor of the general accounting department at Savannah, will be works accountant.

NFCTA Elects Officers

George R. Browner, assistant vice president of Mead Board Sales, Inc., Lynchburg, Va., was elected president of the National Fibre Can and Tube Ass'n. for a one-year term, succeeding Martin H. Stark, president of the Arrow Paper Products Co., Saginaw, Mich.

W. F. J. Fienup, treasurer of R. C. Can Co., St. Louis, Mo., and H. C. Hopkins, president of the King Container Corp., New York City, were elected association vice president and treasurer, respectively.

New Non-Slip Bag Paper Introduced by Scott

Sharper, clearer printing of kraft bag stock is reported for Scott Paper Co.'s new bag stock "Gripper-Kraft," a new type of paper made by the company's Hollingsworth & Whitney Division. This paper is treated at H&W's Mobile plant by a special paper machine process which gives the surface excellent printability, and reduces slippage of bags from 15 to 20 per cent compared to bags made of rough finish kraft or papers coated with non-slip materials.

Feathering, or the tendency to blur, is reduced remarkably when H&W Gripper-Kraft is printed. Ink is retained on the surface and does not soak into the paper and spread. Less ink is required and this represents a considerable savings to the converter.

Mt. Tom Box Moving And Expanding

Mt. Tom Box Co. has purchased a five-story industrial plant in Holyoke, Mass., to which it will move its present corrugated box operations, located elsewhere in Holyoke.

The company, which makes corrugated boxes chiefly for use by paper mills in the Connecticut River valley, will considerably expand its operations beyond those at its former site.

Mt. Tom does not plan to complete the transfer of its operations to the new plant until early fall, although renovation of the building has already started.

Papercraft Buys Pressure Sensitive Tape Plant

Papercraft Corp. has purchased the U. S. Rubber Co.'s pressure sensitive tape plant at Passaic, N. J., and will move the equipment to its paper converting operations at Jeannette, Pa. It is expected that movement of the machinery will begin immediately. Papercraft produces a wide line of consumer items from paper.

at your service at Orange, Texas —

Modern, Complete Plate Fabricating Facilities

Our modern Orange, Texas, plant, one of the largest plate fabricating facilities in the country, is now producing all kinds of custom plate work—including stacks, pipe, bins, tanks and heavy-wall pressure vessels. And, being located on water, rail and truck routes, delivery is fast and shipping costs are low.

The plant is a two-aisle building, 177′ wide and 750′ long, with extended crane runways of 270′ and 200′ lengths at either end. Equipment includes seven cranes capable of lifting, in combined use, over 100 tons; large car bottom-heating and stress-relieving furnaces; heavy plate-bending rolls; a variety of presses and press brakes; the latest in welding and X-raying equipment, plate shears, edge planers, boring mills and drills. An inquiry to the nearest contracting office will bring detailed information.

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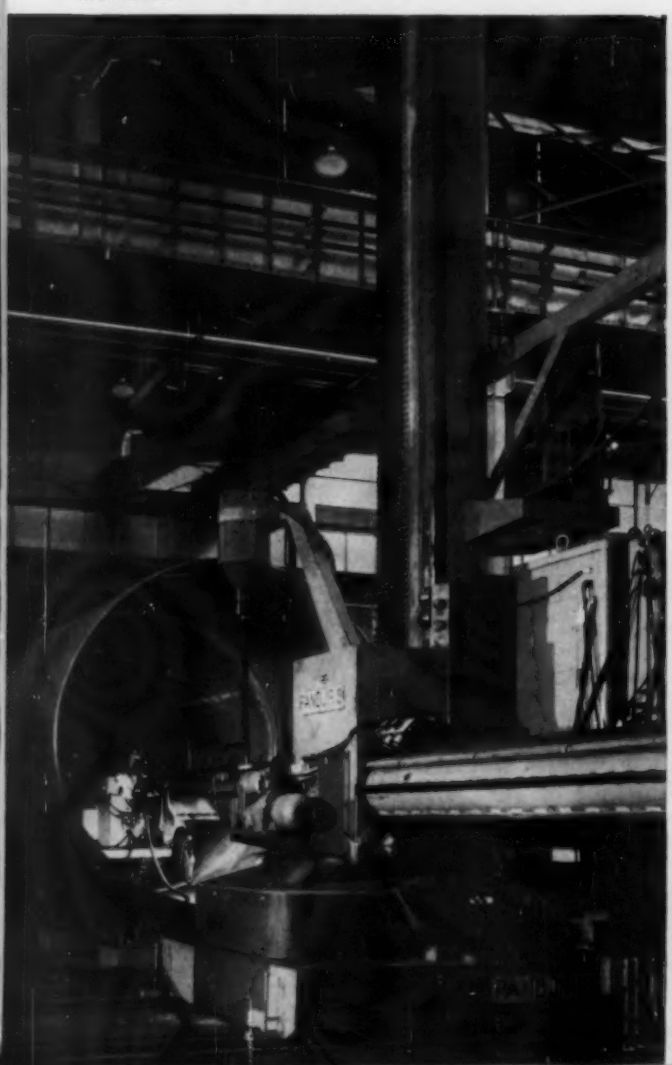
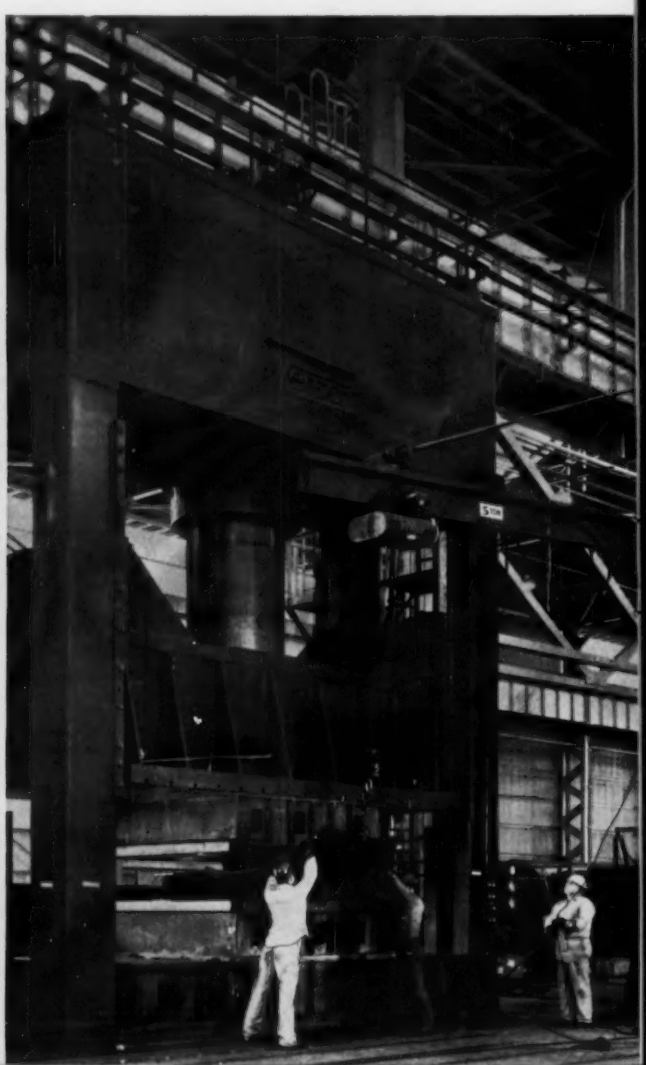
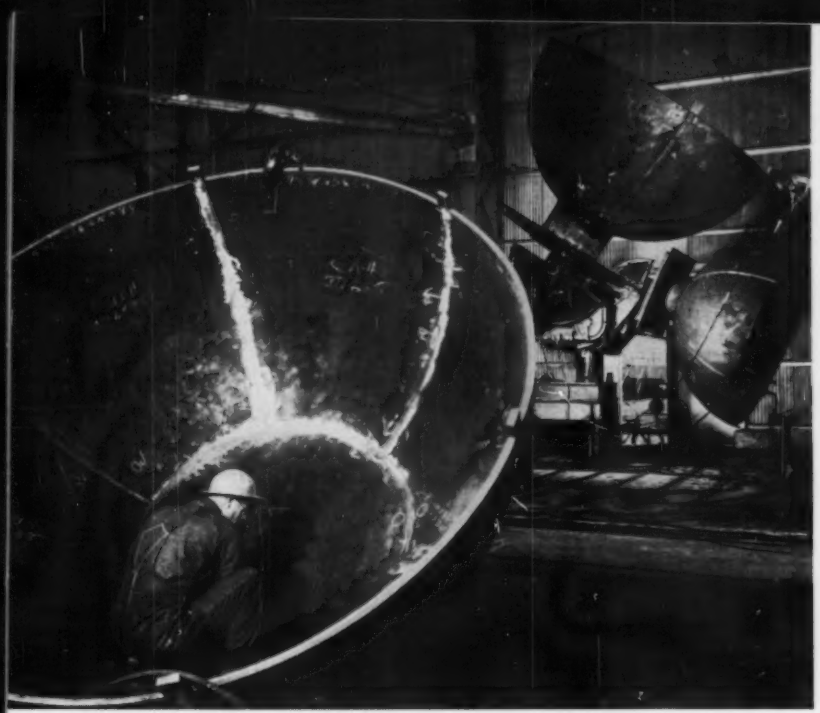
Automatic welding inside circumferential butt joint of two 1⅛" plates with boom welder.



Pressing 1¹⁵⁄₁₆" plates on 2000-ton press for hemispherical heads.



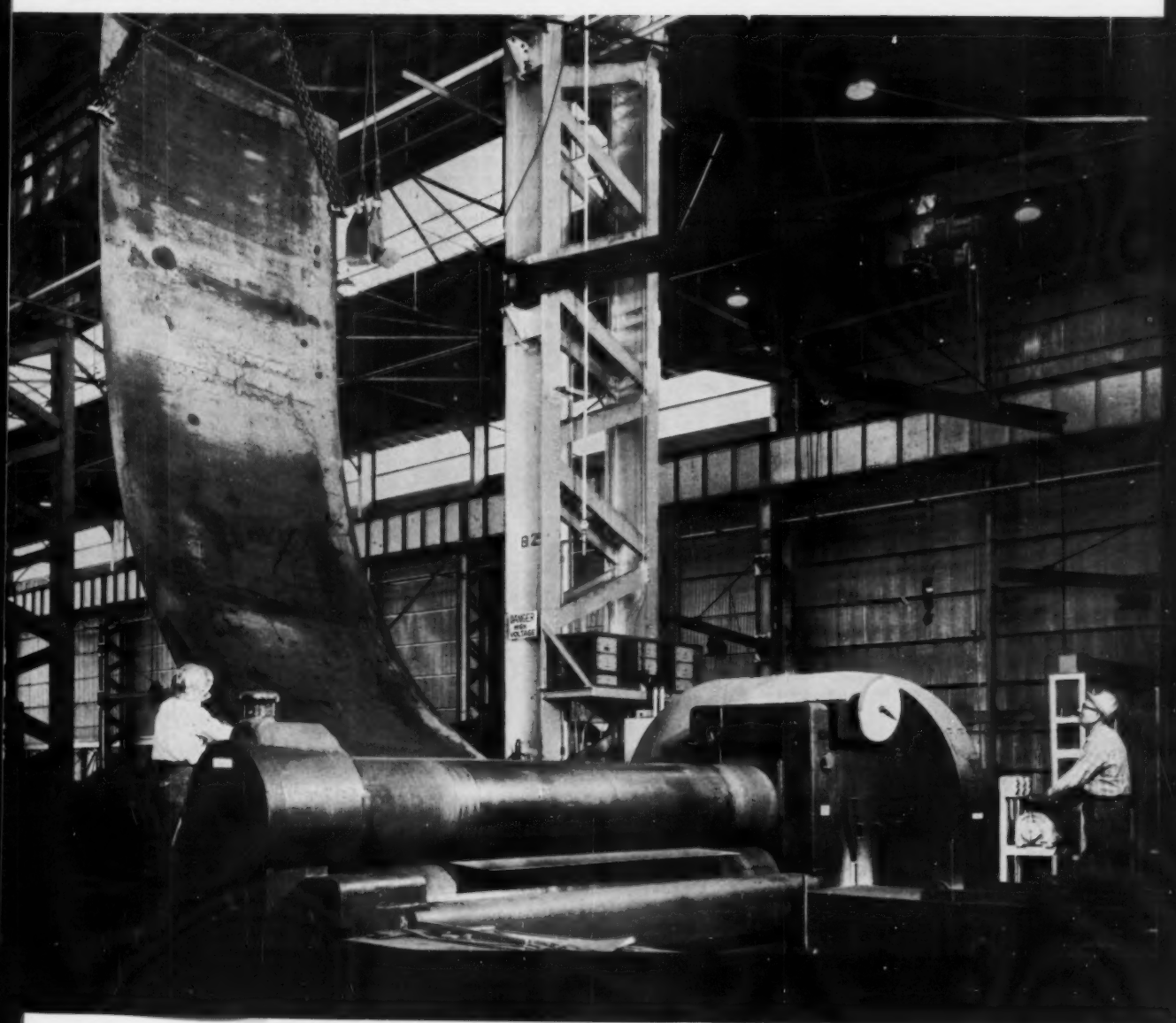


Inside of 9'-6" dia. x 1 1/16" thick hemispherical head being ground smooth.

Complete Construction Service

Possessing the most complete range of construction equipment in the industry and skilled personnel backed by over fifty years of experience, American Bridge is prepared to erect any product it fabricates.

Rolling 96" wide x 1/16" thick plate for knock-down storage tank.



Kohler Coater stirs great interest as . . .

Coating Conference Covers Broad Range of Topics

Ernest F. Barker,
Special Correspondent,
Paper Trade Journal

Details of a new pilot plant coater installation at Provincial Paper Co. upstaged the tenth TAPPI Coating Conference held in Boston this last week. Trends in paperboard coating and the advantages of air doctor and blade coaters, as well as Blandin Paper Co.'s coating preparation plant shared portions of the spotlight during the three-day meeting at the Statler Hotel.

A record number of technical personnel of the paper and allied industries attended the conference as reflected by the total registration of 801 persons. There were nine registrants from foreign countries.

This year the customary evening banquet was replaced by an official luncheon. Stanton W. Mead, president of Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., was guest speaker. Mr. Mead confined his remarks mainly to the challenge of improving coated papers.

Plant visits were arranged for the conferees on Tuesday afternoon through the following companies: Arthur D. Little, Inc., Cambridge, Mass.; Dewey and Almy Chemical Division, Cambridge, Mass.; Oxford Paper Co., Lawrence, Mass., and Nashua Corp., Nashua, N. H.

Coating conference officials were: F. Kaulakis, general chairman (Consolidated Water Power & Paper Co.); R. W. Hagemeyer, program chairman (Wyandotte Chemicals Corp.); R. E. Kilty, local arrangements chairman (A. E. Staley Mfg. Co.); G. E. Hall, publicity chairman (Wyandotte Chemicals Corp.); F. R. Marchetti, treasurer (Titanium Pigment Corp.) and J. T. Loomer, chairman of the TAPPI Coating Committee Council (Continental Can Co.).

It was announced that the eleventh TAPPI Coating Conference will be held May 23-25, 1960, at the Edgewater Beach Hotel in Chicago.

A total of 15 papers were read at the four technical sessions. It is noted once again, as in the past years, that the majority (13) were presented by representatives of allied fields, rather than mills doing the coating. Some of this year's papers are condensed below.

New Coating Prep Plant

C. A. Richardson of Blandin Paper Co., Grand Rapids, Minn., presented a description of its new continuous cook coating preparation plant. Blandin, as is well known, has considerable experience with the trailing blade coater on publication grades. using factory converted starches and relatively high viscosity coating colors. The mill has now installed a continuous starch cooking system which has the following advantages: (1) Coating colors of a wide range of solids and/or viscosities can be prepared by the proper choice of starches; (2) there remains no unpumpable starch paste; (3) the adhesive can be used more efficiently by cooking it in contact with the pigment.

The plant includes facilities for unloading bulk clay from hopper cars, for preparing and storing 70 per cent clay slip, for screening the clay and starch before cooking and for preparing the coating color for one coater. It is planned to expand the plant to enable it to handle the mill's second coater.

Clay unloading is handled by a "Cyclo-Vac" system, a vacuum unloader combined with a centrifugal separator. The clay is conveyed from a lightweight aluminum car adapter through five-inch pipe to the Cyclo-

Monday morning speakers (l. to r.): P. W. Plante, St. Regis Paper Co., Deferiet, N. Y., chairman; R. W. Hagemeyer, Wyandotte Chemicals Corp., program chairman; and Robert C. Chase, U. of Me.

Speakers at the second session, Monday afternoon (l. to r.): F. R. Marchetti, Titanium Pigment Corp.; C. A. Richardson, Blandin Paper Co.; L. A. Gilbertson, Marathon, session chairman; J. R. Gunning, Abitibi Power and Paper Co.; G. L. Booth, Black-Clawson Co.; and A. W. Claxton, Minerals and Chemicals Corp.

Vac by a 50-h.p. motor Nash vacuum pump. Clay-air separation is accomplished as follows: the first separation takes place when the clay and air first enter the bottom cone. The air and finer particles then travel upward to the secondary separating zone which consists of a louvered rotor driven by a 5-h.p. motor. The third separation process occurs at the center of the rotor where the finest particles are separated. Rate of unloading varies considerably with the vendor because different clays vary considerably in their conveying properties. Unloading takes between five and six hours but some 50 cars have been unloaded in less than three hours.

From the rotary valve the clay drops directly into a 13-foot stainless steel make-down tank where it is made into a 70 per cent slip. Dispersion is accomplished with a curved blade turbine agitator. Dispersion is complete in less than 2 hours after the clay is all in and the lumps are broken up. Clay is stored in three agitated tanks of 110-ton of clay at 70 per cent slip capacity. The clay slip is conveyed from the make-down tank to storage with a Moyno pump at the rate of 50 g.p.m. Two lines of tanks for the preparation of the coating colors are installed in parallel, one used for the top side color and the other for the wire side color.

Stainless steel is used throughout the system for all tanks, piping and agitators to insure a minimum of contamination. All the tanks except the starch slurry tanks are 1000-gallon capacity. Each line starts with a mixing tank equipped with a propeller type agitator. The proper volume of 70 per cent clay is pumped from storage into the mixing tank through a 230-mesh Sweco screen at the rate of 50 g.p.m. The volume of clay is regulated by a timer—the operator starts the pump and the timer shuts it off.

The starch slurry tank is equipped with an agitator identical with those in the mixing tanks. The proper amount of water to produce the desired coating solids after cooking is metered into the tank and the dyestuffs are added. The starch is added while the pump circulates. After a few minutes of agitation the starch slurry is pumped into the mixing tanks. The mixture is agitated thoroughly and then circulated to the Hasco heater and back to the mixing tank at a rate of 23 g.p.m.

The cooking reaction takes place instantaneously in the combining tube of the Hasco heater as the clay-starch slurry meets 125-pound steam as it passes through the cooker tank. The cooked material is then passed into the tank and it accumulates there until the batch has all been cooked through the heater. As soon as the agitator blades are covered, the agitator is started and the mass is agitated thoroughly for a minimum of one hour. Temperature drops only slightly during this time and any cooking not completed at the heater is therefore completed during this storage-agitation time. Temperature is controlled by a Bailey instrument which operates a control valve in a steam line to the heater.

Other components of the coating mixture are added to the batch in the cooker tank while the mixture is agitating. Next, the batch is pumped through a 60-mesh Sweco screen into an agitated storage tank. From the storage tank the coating color is pumped through insulated pipes to a coater supply tank. The supply tank is equipped with a probe which shuts off the storage tank pump when the predetermined high level is reached. At frequent intervals the operator starts the pump manually from the panel board in the preparation plant and it is shut off by the probe. This keeps the coating color in the pipe hot enough to prevent set-back which could plug the pipe.

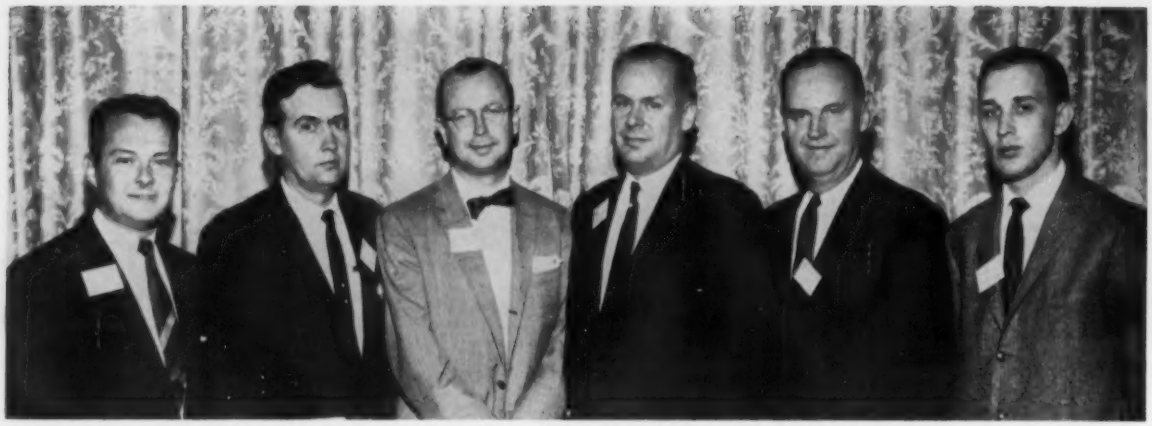
This system of coating preparation has been used at Blandin to prepare coating colors from 38 to 62 per cent solids, all at the fairly high viscosity required for trailing blade coating.

Panel Symposium

Tuesday, May 26, featured a symposium that discussed the subject: "Coatings, Past, Present and Future." The panel confined itself principally to reviewing available information and past accomplishments. Its members expressed the strong opinion that coating technology research and development work must continue. Nothing revolutionary or outstanding came out of this three-hour session, neither as a result of the formal talks presented by the panelists nor during the question and answer period after the formal paper presentations.

Speaking for the past, N. I. Bearse, mill manager, Oxford Paper Co., Lawerence, Mass., said that "the quality of coated paper in the early days was the equal of today's product. Productivity and efficiency were not comparable but very fine papers were made when judged by finish and printability."

"Today," remarked H. M. Annis, vice president of TAPPI, and director of research, Oxford Paper Co., N. Y., "the requirement is that we must attain good printability, good press performance, and low cost . . . at a



Wednesday morning speakers (l. to r.): D. S. Greif, National Starch Products, Inc., Plainfield, N. J.; C. R. Russell, Northern Regional Research Laboratory of U. S. Department of Agriculture, Peoria, Ill.; Charles Whelpton, session chairman, Champion Paper and Fibre Co.; N. G. Tompkins, Dewey & Almy Chemical Co., Cambridge, Mass.; H. G. Guy, Koppers Co., Inc., Pittsburgh, Pa., and R. L. Hagerman, Dow Chemical Co., Midland, Mich.

basis weight of 40 pounds and under without sacrificing printability and opacity."

"Coatings—Future." P. J. Thoma, of Time, Inc., Springdale, Conn., pointed out that pressures toward lighter weight stocks, motivated particularly by increasing postal rates, have been experienced before and they have till new been met to a very satisfactory degree by the ingenuity of the people producing coated papers. Basis weights have gone down from an average of 55 pounds per ream at the end of the war to somewhere in the neighborhood of 40 pounds at the present time. Further reductions of basis weight which are being worked on within the framework of normal operating procedure seem to have a particularly deleterious effect on the finished appearance and feel of the magazine, particularly noticeable on stock for multi-color copy. Mr. Thoma expressed doubt about the desirability of a further decrease of publication grade bulk because of possible resistance from readers and advertisers.

The following considerations for tackling the problem were suggested as "starting points": (1) change coating methods, (2) change coating materials and (3) eliminate some of the calendering. Mr. Thoma reported on some initial experimental work performed by his company, in an effort to obtain a coat weight of only 3 to 3.5 pounds by double coating. "You are faced with Hobson's choice," Mr. Thoma said, "in maintaining solids and coat at extremely high pressures or use reasonable pressures and drop solids." He added: "We are satisfied from our work that a reduction in coat weight from 6 or 7 pounds per side to 3 pounds is plausible."

Mr. Thoma's comments contained the following other highlights:

1. Print quality is by no means tied directly to coat weight.

2. It is suspected that the answer to satisfactory screen printing and freedom from strike-through depends on effective film continuity. This seems reasonable if one considers the coating as a barrier layer. This view was bolstered by an experiment in which formulas of the same solids (which are considered more important than viscosity), the same clay, same binder content and same coat weight were compared with formulas differing only in binder type.

3. Latex was compared with starch and experimental coloring showed that the latex coating was smooth and even in color but that the starch coating was spotty, showing a concentration of color in the valleys.

4. Such films as developed in these experiments were however not satisfactory as "one-shot" coatings.

5. In further work high solids coating were chosen to minimize water absorption. A binder which drops water out quickly so that the coating stays at the surface was used in this case.

6. Fine particle size clays were chosen which, having more surface, tend to give bulkier film.

7. A trailing blade application method was chosen, which presumably tends to give a level film.

8. From this approach a sheet was obtained which was acceptable for brightness, opacity and caliper and excellent for screen printing. Solids tended however to be spotty and gloss ink hold-out was "way off."

Mr. Thoma made a number of other suggestions for approaching "coated papers of the future": (1) Some sort of sizing operation before the stack which "would mean a difficult and touchy operation because the water addition of necessity gravely weakens a sheet held in tension," (2) precipitated coatings; (3) saving the calendering operation for the end of the process and curtailing prior mechanical smoothing.

Mr. Thoma concluded: "Fiber bundles and intact tracheids have obviously far less bulk than fibrils—yet bulk and area are what the converter wants to buy. The weight concept is not only an outmoded convenience, it is a deceptive guide to the true economics of yield, in pulping, refining, and papermaking."

Particle Packing Study

The first technical session of the tenth TAPPI Coating Conference heard a progress report on TAPPI Project 600: "The Effect of Pigment Combinations and Coating Solids on Particle Packing and Sheet Characteristics," presented by R. W. Hagemeyer of Wyandotte Chemicals Corp. This work, principally a fundamental research project up till now, has been conducted by Wyandotte research personnel and the company has, accordingly, contributed a substantial sum to this TAPPI research project.

The progress report told of the continuing work on this project which is concerned with particle packing for water dispersions of three basic shapes, the plate, the needle and the rhomb, alone and in combinations. The research project's objective is to show how important properties of

Wednesday afternoon speakers (l. to r.): W. L. Rhodes, Rochester Institute of Technology, Rochester, N. Y.; H. J. Connell, S. D. Warren Co., Cumberland Mills, Me.; G. K. Cleek, Allied Chemical Corp., Hopewell, Va.; and A. Miller, Kelco Co., San Diego, Calif. (A. B. Metzner, University of Delaware, Newark, Del., was absent.)

the pigment suspension depend upon particle packing.

Particle packing is expressed in terms of Relative Sediment Volume (RSV). High solids mixing in the presence of chemical dispersants was used to provide proper dispersion.

The following findings were reported:

1. RSV is dependent upon shape or combination of shapes.

2. RSV correlates quite well with viscosity as measured at both high and low rates of shear; high RSV giving high viscosity and low RSV giving low viscosity.

3. RSV increases with dilution because of flocculation which takes place. Further, the plot of RSV versus particle shape or combination of shapes is similar in appearance at all dilutions.

4. RSV as measured by centrifuging with water present, or by filtration with water removal, gives similar results.

5. While the RSV does not give a good indication of drainage rate, some correlation may exist.

Mr. Hagemeyer indicated that additional work is expected to "soon to bring this work into the realm of practical usability in paper mills." He pointed out that there now exists a need for other firms in the coating field to volunteer their assistance in carrying out further research work on this project.

Flow Property Analysis

Robert C. Chase, Department of Chemical Engineering, University of Maine, related: "The Application of Statistical Analysis to Some of the Variables Affecting the Flow Properties of Paper Coating Colors." This paper reviewed the TAPPI Coating Committee's research on the rheology of paper coating colors which has been in progress at the University of Maine for the past four years. The early period of this work was spent on reviewing available literature and familiarization with the problems involved in coating paper. This preliminary study revealed that most coating colors were studied through the use of viscometers. A study was then undertaken using a Newtonian fluid and the Hercules, Hagan and Brookfield viscometers.

Next, it was decided to prepare a series of experimental coatings varying simultaneously such variables as pigment composition, pigment particle size, per cent solids of color, and to study the effect in terms of smoothness and printability. Eight variables were controlled: Per cent solids, per cent dispersing agents, per cent adhesive, pH, coating weight, machine weight, pigment particle size and color viscosity. Regression analysis techniques were used to process the data.

This statistical approach permitted: (1) the simultaneous analysis of a large number of variables; (2) the selection of variable magnitude in selected observation equations, permitting the entire range of each variable to be studied while keeping the total number of test runs within reasonable size; (3) determination of the significance of individual variables and (4) the determination of the confidence level that can be placed in the final equations that are obtained.

Clay fractionated into five particle ranges was used. pH range of the coating color studied varied from 5.0 to 9.1. Tetrasodium pyrophosphate was used as dispersing agent. Starch was used as adhesive and varied from 10 per cent to 20 per cent by weight based on the amount of clay used. Final coating color solids were varied from 54.9 per cent to 71.4 per cent. A reverse roll coater was used and adjusted to produce at 8- to 10-pound coating. Dennison wax pick tests were conducted on conditioned sheets of both calendered and uncalendered paper. Printability tests were conducted on the Vandercook proof press and the Claybourne proof press at Oxford Paper Co. and St. Regis Paper Co.

In this work eighty-seven observation equations were obtained. These equations indicate that particle size and adhesive content are of importance when trying to obtain smoothness and that per cent solids and coat weight are important when measuring I.G.T. printability. No conclusions can be drawn for the wax

Panel symposium on coatings (l. to r.): P. J. Thoma, Time, Inc.; W. H. Aiken, Diamond-Gardner Corp.; A. W. Neubauer, Crown-Zellerbach Corp., panel moderator; N. I. Bearse, Oxford Paper Co.; and H. M. Annis, Oxford Paper Co.

Candid photo at luncheon speaker's reception: R. G. Macdonald, TAPPI; luncheon speaker Stanton W. Mead, president, Consolidated Water Power and Paper Co.; Mrs. J. T. Loomer; J. T. Loomer, chairman, Coating Committee Council (Continental Can Co.).

pick test, Vandercook printability or Claybourne printability since none of the variables studied was found to be significant at the level required for research work.

Coating Flow Modification

In the "Modification of Coating Color Flow Properties With Amines," A. W. Claxton, Minerals and Chemical Corp., of America, Menlo Park, N. J., indicated that research involving the addition of very small amounts of certain amines to clay-water slurries and to coating colors has shown that the amines have a profound effect upon their rheological properties. Hagan rheograms of clay-water slurries containing varying quantities of diethylene triamine illustrates an extreme degree of dilantancy, dependent upon the amount of amine used. Mr. Claxton offered a theory to explain the action of amines; a joining together of individual clay particles edge to edge to result in an effective increase in diameter to thickness ratio.

The extreme dilantancy exhibited in high solids slurries with polyamines added were not evident in the starch coating colors studied. Instead, the coating colors showed increased thixotropy. Leveling index was increased from 0.299 to 0.413 in one case by the use of 0.20 per cent ethylene diamine.

Paper coated with colors containing amines show a significantly higher gloss, easier finishing and smoother printing surface than control coatings without amines. Evaluation of coating colors with roll-inclined plane equipment indicates that coating color solids can be reduced with little or no adverse effect upon a real ratio (a measure of the fluid migration properties of the coating color) and with accompanying improvement in gloss and printing smoothness.

Styrene-Butadiene Effect

R. F. Avery, A. R. Sinclair and H. G. Guy of Koppers Co., Inc., Pittsburgh, Pa., presented a paper entitled: "The Effect of Styrene-Butadiene Ratio on the Properties of Clay Coated Paper."

A series of latices made with the same emulsifiers and polymerized under the same conditions varying only in styrene-butadiene ratios were tested as pigment binders for clay coated paper under controlled conditions. These latices were used alone and in combination with starch and casein. In all cases the total binder was 18 per cent clay solids. In combination with casein or starch the latex was reduced to one-third of the binder. The styrene-butadiene ratio was varied from equal parts of styrene to butadiene to 90 parts of styrene and 10 parts butadiene in units of 10. These coatings were compared with those containing only starch or only casein, both at the 18 per cent and 12 per cent levels.

F. Kaulakis, Consolidated Water Power and Paper Co., general TAPPI Coating Conference chairman.

Coatings were applied with the Koppers-Dilts pilot plant coater operating at a constant speed of 600 f.p.m. The coatings were applied to one side. A commercial coating raw stock of 43 pounds per ream was used throughout these tests. Coating weights varied from 6 to 18 pounds. The same machine settings were used for each coating system.

The following properties of coated paper were examined: wet rub, fold resistance, stiffness, pigment binding, varnish holdout, gloss, smoothness and coating weight.

Wet rub resistance, pigment binding and gloss were all found to be affected by the styrene-butadiene ratio. There were slight differences in stiffness, varnish holdout and fold resistance.

In every case the addition of the latex to the starch or casein system resulted in improved wet rub resistance. As the styrene content was increased there was a tendency for the pigment binding strength to decrease, whereas the gloss increased.

Water Retention of Latex

R. L. Hagerman, R. G. Jahn and W. H. Somers, Dow Chemical Co., Midland, Mich., highlighted the "Study of the Water Retention of Latex-Bound Pigmented Coating Colors."

Composition variables included in this study were: pigmentation; pigment dispersant composition and concentration; adhesive composition and level; solids content; miscellaneous additives. It was found that water retention is related to the wet and dry pick resistance of boxboard coated with the particular colors evaluated in this water retention work.

Copolymer Emulsions

Norman G. Tompkins, Dewey and Almy Chemical Division, W. R. Grace

& Co., Cambridge, Mass., presented a paper entitled: "Microparticle Size Vinyl Acetate Copolymer Emulsions as Economical, Low Odor, Clay Coating Binders." Here are highlights of this paper.

Several properties of an ideal latex paper coating binder were discussed and comparisons were made with the general properties of vinyl acetate polymers and copolymers. Many points of correspondence were noted and the conclusion was drawn that in many respects this class of materials should make excellent clay coating binders for paper. The disadvantages of previously available vinyl acetate polymer and copolymer emulsions were pointed out. These disadvantages have so far prevented the widespread use of this class of materials as paper coating binders. The need for minimizing or eliminating them by redesigning and modifying existing products was emphasized in this discussion.

A number of experiments were described in which certain vinyl acetate copolymer emulsions were used as binders in clay or clay-titanium dioxide coatings both alone and in combination with starch. Coated papers were made by hand methods and on pilot coating equipment and these papers were tested for such properties as pick resistance, gloss, brightness and opacity. The results obtained were compared with those observed on other sheets similarly coated, using conventional latex coating binders. Results showed that certain of the vinyl acetate copolymer emulsions tested "offer an attractively economical means of obtaining coatings of high quality, having minimum odor and tendency to embrittle and discolor with age and exposure to light."

Ink-Film Control Charts

W. L. Rhodes and John Petrycki, Rochester Institute of Technology, Rochester, N. Y., related their "Experience With Control Charts On Ink-Film Thickness." This paper described experience over a ten-month period with control charts on ink density and sharpness.

One of the experiments in color reproduction at Rochester Institute of Technology called for repeating results obtained using an offset press to print three colors on a cast-coated stock. Density and sharpness were measured with a densitometer. The pressman was asked to achieve a constant ink density and sharpness within one sheet and from sheet-to-sheet on all press runs.

The paper described how the pressman tried to achieve uniformity and showed his results by means of control charts and related statistical tests.

One batch of stock exhibited a periodic sheet-to-sheet variation. Paper tests were performed on these sheets to see if any of the test methods correlated with press results.

Urea Content Coatings

G. K. Cleek, Nitrogen Division, Allied Chemical Corp., Hopewell, Va., and R. C. Chase, U. of M., presented "Application of Urea-Formaldehyde Concentrate to Starch Clay Coatings on a High Solids Pilot Plant Roll Coater." The following is an abstract of this paper.

In order to improve the wet rub resistance of starch-clay coated paper "Urea-Formaldehyde Concentrate 85" was added to the coating prior to application to the paper. In all cases investigated considerable improvement in the wet-rub resistance was found as a result of this addition.

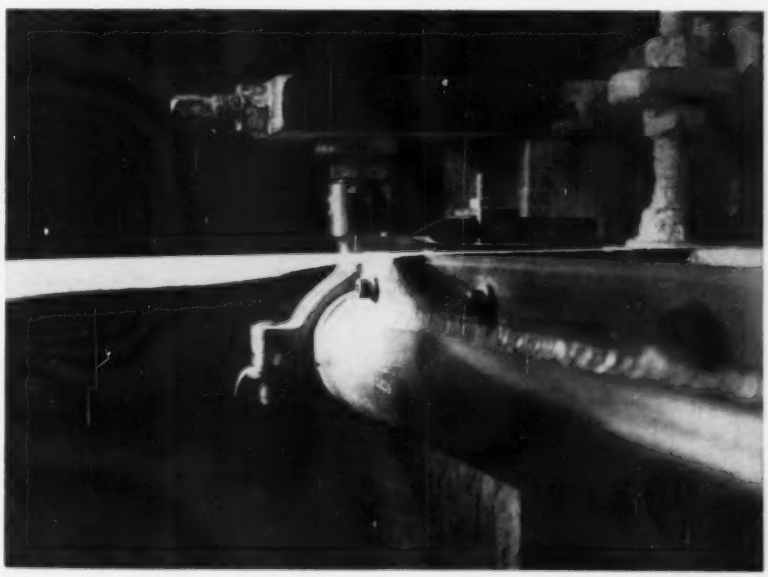
Among the variables investigated were: amount of UF-85 required to improve wet rub resistance; pH at which the most improvement resulted; the amount of curing time required for wet rub resistance to develop and the degree of reaction with different types of starches.

The results indicated that adequate wet rub resistance was developed by all the starches in the pH range of six to nine within the time available for drying on a paper machine running at moderate speeds. Additional wet rub resistance developed as the coated paper cured. The best results were obtained when using a waxy maize starch containing no amylose.

New Coater Installation

J. R. Gunning, Provincial Paper Co., Georgetown, Ont., described experiences at his mill with a pilot plant installation of what he referred to as the Kohler coater. In this method the coating, which has been applied to the underside of a web of paper, is smoothed and metered by a blade of preselected thickness, which forms one boundary of the pond from which the coating is picked up.

The sheet is held against the blade by an air blast acting on top of the paper. There are no moving parts between the roll preceding the coating operation or after the coating application. The principal piece of equipment, in what will no doubt be called the Kohler coater, is a tube situated beneath the web. This tube has an outer shell which supports the other components and it also contains the coating color. There is an inner tube through which the coating color is introduced and distributed evenly along the length of the outer tube, i.e., across the width of the web. The coating material rises through an adjustable slot next



Close-up of Kohler Coater, showing partial web passing through coating head.

to the metering knife from the main reservoir and from there across the pond bottom to fall over a back weir and into a catch pan. The color flow is consequently countercurrent to the movement of the sheet. An air nozzle is located immediately above the metering knife. The air flow controls sheet pressure against the blade or metering knife and the coat weight is controlled by means of this process.

The paper was prepared jointly by John B. Kohler, inventor and patentee, and a consultant to the converting industry.

PAPER TRADE JOURNAL learned that Provincial Paper Co. is now anticipating the installation of a Kohler coater (off-the-machine because Provincial is a coating mill). It was also learned that a domestic mill plans to place an order for a Kohler coater within a matter of days. PAPER TRADE JOURNAL plans to do fuller justice to this new coating method development by featuring it in a detailed article in the very near future.

Paperboard Coating Trends

It is difficult to try to project future trends of coated board, stated William H. Aiken, directior of research, Diamond Gardner Corp., Middletown, Ohio. However, an analysis of what happened in the coated board field until five or six years ago is relatively simple. After the war the industry rapidly increased coating capacity until 1948. Then "it sat back to digest what it had installed and for five years there appeared to be small but steady growth in coating capacity in the paperboard industry."

At the present time, no coating method has been demonstrated to be superior to all others for producing a coated boxboard sheet of good print quality. Of the seven best printing sheets of boxboard made today, three are filled sheets made with Champion coaters, two are bleached sheets made with trailing blade coaters, one is a filled sheet made with an off-machine air-knife coater and one is a filled sheet made with an on-machine air-knife coater. While there are minor differences in the print quality of these seven sheets, all have excellent printing characteristics by letterpress, offset and gravure, and there is little to choose from between them. On the other hand, some of the poorest printing sheets made today are coated by trailing blade, Champion and air-knife. Apparently there are other factors, primarily those of the base sheet, which are more important than the coating application method.

A survey has been conducted of the capacity available for coating paperboard in the United States. This information was obtained by sending a questionnaire to the various producers of coated board with the request that they give the type of coating equipment in their plants, when it was installed and the capacity of the machine. It is believed that this survey is fairly complete in regard to machine coating installations which were in operation by the end of 1958.

The capacity figures given are the current capacities of the machines and may, therefore, be somewhat different than when the coaters were installed. In those cases where several different types of coaters are installed on a given machine, capacity for each of them is shown, even though some of the units may no longer be in use. Twenty-two companies in 33 plants have 98 coating units on 45 machines for an average daily capacity of 118 tons per machine. The breakdown of the 98 coating units is as follows: 80 Champion units, 9 air knives, 6 letterpress print roll coaters and one trailing blade coater. Three of the companies who have machine coating installations and two other companies have nine coating installations for an average daily capacity of 49 tons per installation. Eight of these units are air-knife and one is a roll coater. Twelve companies in 14 plants have 25 coating units on 18 machines for an average daily capacity of 290 tons per machine. The breakdown of the coating units is as follows: 7 air-knives, 2 gravure print roll coaters and 16 trailing blade coaters. Three of the companies, who have on-machine coaters, also have six coating units on three off-machine coating installations for an average daily capacity of 133 tons per installation. Two of these coating units are air-knives and four are trailing blade coaters. One plant with an air-knife on a machine has a daily output of 200 tons. Three other companies in four locations have five coating units on five off machine installations, producing an average daily capacity of 67 tons per installation. Two of these coating units are reverse roll coaters and two are air knives.

The survey shows that on a six-day week basis, there is installed coating capacity to produce about 1,800,000 tons of coated filled board per year. This is about 73 per cent of the total amount of filled boxboard produced in 1958. Actually only about 12 per cent of the filled boxboard produced in 1958 was coated, indicating that on the average the coating capacity for filled boxboard was used only about 17 per cent of the time. By the end of 1959, there will be capacity installed to coat 1,510,000 tons of bleached board. This is about 98 per cent of the bleached board produced in 1958. No figures are available on how much coated bleached board was actually produced.

There are a number of trends in the usage of boxboard which must be considered before a look can be taken into the future. Some of these trends are counter to each other, but all must be taken into consideration:

1. There is currently an overcapacity of facilities for bleached and filled boxboard. Despite this, plans are under way for expansion of bleached board facilities, and many producers of filled boxboard have improvement programs to speed up their machines in order to reduce cost. This over-capacity, which is likely to exist for several years, will continue to be a spur to both producers of bleached and filled boxboard to improve their quality and to lower their costs.

2. At the present time, there is a substantial demand for a glossy board. This may continue or it may prove to be a passing fad. As gloss is increased, more coating weight is required to get a given amount of hiding power and this leads to increased costs. Competing with this trend toward a glossier board are ways to produce a high gloss printed carton by printing methods.

3. In recent years, there has been a very strong upgrading of printing quality with more and more printed board going to high quality halftone printing. This has been largely accomplished by a very large upgrade in the printing quality of board, and this has been one of the factors which has led to improvement in coated board quality.

4. For many years, there has been a certain amount of white ink printing on both unbleached kraft board and filled boxboard of low brightness to give a white printed sheet.

5. There is a very strong tendency for producers of board to acquire carton plants. The number of inde-

(Continued on page 62)

Which of these 3 products and services can you use from BECCO?

"Enclosing $1.00 — Send Patent License"

Well, perhaps there's a little more to your gaining use of Becco patents than just mailing your dollar in, but not much more. And certainly, no more money. The $1.00 really does cover it.

Becco has lots of patents, granted as a result of innovations in the use of Hydrogen Peroxide and other Peroxygen chemicals developed in Becco's Research Laboratories. But they don't do us a whole lot of good locked tightly in our safe. So, we long ago adopted the following policy:

If one of our patents can help you, we'll be glad to license the rights to you **perpetually,** for just one dollar. You get a nice certificate, incidentally, to cover the legalities, but more important – you also get free our complete engineering help in setting up your process, handling the material, maintenance, etc., etc.

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Use the coupon below to ask for a Sales Engineer – or our list of patents – that may help you solve an important problem.

BECCO fmc

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Dept. PTJ-F

Gentlemen:
Please send your list of patents available on the use of

- ☐ Hydrogen Peroxide
- ☐ Peroxygen Chemicals
- ☐ Persulfate Chemicals
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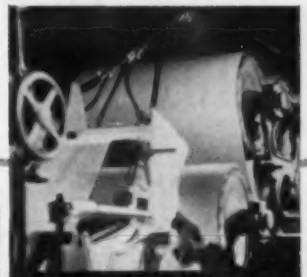

How BRIGHT Is BRIGHT?

That's a hard question to answer. It depends on how the pulp is treated.

Trouble is, paper can show an 86 level at the layboy, but by the time the paper is delivered, this has dropped to 82 or lower. With conventional bleaching methods, that is.

Many chemical pulp producers have found the answer to this problem in Becco's Dryer Steep Bleaching Process (patented, but licensed perpetually for one buck). Applied by means of spray pipes across the pulp sheet ahead of the dryers, Becco Hydrogen Peroxide increases brightness permanence and bleaches in transit. Often, in fact, an 86 layboy level **improves** to 88 by delivery time.

This is just one example. Becco has a vast amount of technical knowledge compiled from 31 years of experience with **all** types of pulp. If **you'd** like help with your pulp, free of any obligation, let us know with the coupon below.

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Dept. PTJ-C

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FIRM_____
ADDRESS_____
CITY_____
ZONE____ STATE_____

Problems in handling Hydrogen Peroxide

?

Becco's Four-Fold Engineering Service Program—offered free—includes:

1. Comprehensive survey of your facilities.
2. Specific proposal with recommendation of proved equipment and where it is obtainable.
3. Installation supervision by Becco.
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Can you use this free Becco help, based on more years of experience with bulk handling of H_2O_2 than any other manufacturer? Use the coupon to let us know.

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Gentlemen:
Please tell me more about your Four-Fold Engineering Service.

NAME_____
FIRM_____
ADDRESS_____
CITY_____
ZONE____ STATE_____

The Future of Paperboard Through Better Planning

. . . in controlling costs, increasing per capita consumption, enlisting plastics as an ally, and using research and market development funds realistically.

R. Carl Chandler,
Chairman of the Board,
Standard Packaging Corporation,
New York, N. Y.

Perhaps we can take a step toward determining why, in a year when the paperboard industry appears likely to achieve an all-time high in production and in profits, some of us have reservations about the future.

Production & Profits

Board production for the week ending May 9th, 1959, was 18.6 per cent higher than a year ago. New orders were up 16.5 per cent. Unfilled orders were 37.2 per cent above the 1958 level. Barring unforeseen circumstances, 1959 may be a record year in tonnage.

The profit picture, unfortunately, is not as promising. I hope that in 1959 net earnings for the paper and allied industries will be better than the 7.6 per cent of net worth recorded in 1958 and the nine per cent of net worth achieved in 1957. Earnings in recent years have been poorer only in 1952 when they were 8.4 per cent of net worth, and in 1954 when they were 8.7 per cent. In 1947, by comparison, the industry achieved net earnings of 19.4 per cent.

Net earnings in relation to sales in 1958 were 4.5 per cent. In 1957 they were 6.3 per cent of sales. Again, both these years represented the poorest performance since 1956. In 1957, net earnings in relation to sales were 12.1 per cent, almost double last year's achievement.

So the rub is not hard to find. Sales have increased 81.4 per cent in 10 years and profits have declined five per cent on this rise in sales. The industry has greatly increased its investment in plants and equipment. Wages and salaries, in addition, have increased 86.6 per cent. We have been unable to raise prices and improve productivity sufficiently to keep pace with rising costs.

Some members of our industry feel that we have increased our capacity too rapidly. Last year, for example, capacity was up 12 per cent over 1956, while tonnage was down 3.5 per cent. Lower operating rates and reduced earnings, this reasoning continues, were inevitable.

If excess capacity were the only reason why profits were unsatisfactory, we could see light ahead. Growth in capacity is slowing down. Industry capacity this year is estimated to be 37.4 million tons. It was 36.7 million last year. In 1960, it will be 37.8 million tons, an increase of only .4 per cent. If our present level of business prosperity continues, we may reasonably look forward to increasing sales volume and a continuing improvement in operating rates this year and next, so that short term profits are likely to improve.

But how far does that take us?

In 1956, an outstanding tonnage year, board consumption per capita was 168.4 lbs. This was only a fractional increase — .4 lb. — over 1955. We have not been able even to duplicate this performance in 1957 or 1958.

If, as I anticipate, we again in 1959 fail to equal our per-capita usage of 1956, it will mark the first time in 60 years that three consecutive years have passed without the industry showing a gain in this important index.

This three-year loss signifies caution. The danger signal is the possibility that we may not achieve a substantial increase in per capita consumption during the next three years either.

Something of the Future

All manufacturing industries, taken as a whole, expect an 11 per cent increase in capacity by 1962 and an 18 per cent gain in sales. The paper and pulp industry expects a 19 per cent increase in capacity but only 18 per cent up-turn in sales. In other words, we do not expect sufficient sales growth to balance our expanded capacity. Only one industry other than ours does not look forward to bigger gains in sales than in capacity over the 1959-1962 period.

For manufacturing as a whole, the expected percentage rise in sales through 1962 has been forecast as double the planned increase in capacity.

In 1959 the American people, and American industry, have more money to spend—and are spending more—than in any previous year. Their gross national product will be at least 30 billion higher than in 1958. If we base our computation on an 18-month period beginning July 1958, our tally will show in excess of $50 billion by the end of the year.

Consumers' spendable income this year is expected to be $327 billion. This is $13 billion more than the previous all-time high of 1957. Why, against this backdrop of a booming economy, do some of us in the paperboard industry appear to look to the future with what W. S. Gilbert, (the lyricist member of the Gilbert & Sullivan team), once described as "modified rapture"?

Perhaps there is a clue in this fact: The productive capacity of American industry now assures intensive competition for the buyer's favor. In 1959, in the midst of a spectacular gain in the nation's economic position, we still find, generally speaking, the first buyer's market in a non-recession year since World War II.

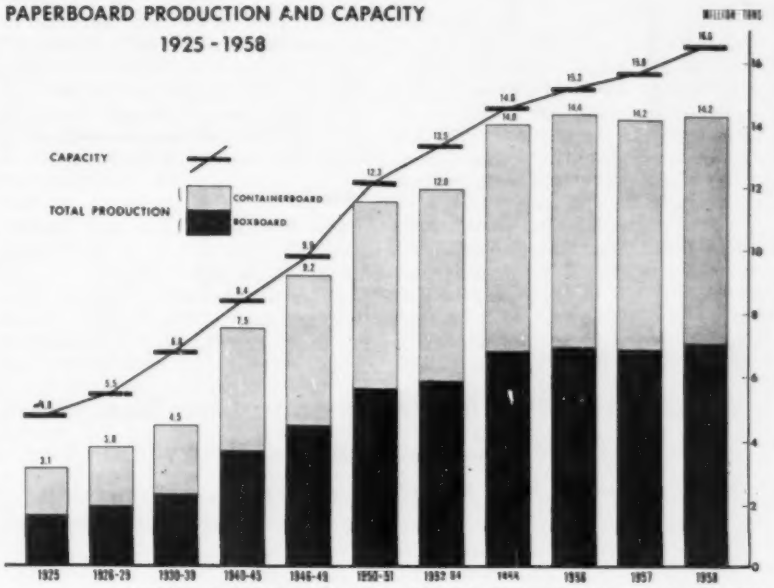
We have been plagued, in recent years, by marginal profits. We have

From keynote address to the 1959 Spring Meeting of the National Paperboard Ass'n at White Sulphur Springs, W. Va., May 19-20.

labored mightily to improve our operating rates and to lower our cost. But, no amount of increased efficiency can help us reduce costs on orders we haven't received. A five per cent increase in selling price will do more immediately to improve profits than days, months, and weeks of effort in cost reduction at the operations level.

We may have tended to oversimplify; to expect the sales department to provide the leadership in a buyer's market, and the manufacturing department to point the way in a seller's market. From here on, we must assume that it is always a buyer's market. Our customers will have multiple choices, not only of source of supply but also of an ever-increasing variety of materials. We must organize our industry and our individual companies not to woodlands alone, not to the existing equipment, not to the trim, but—above all else—to our markets.

PAPERBOARD PRODUCTION AND CAPACITY
1925 - 1958



1958 Paperboard Industry Statistics, published by National Paperboard Ass'n, May 1959.

Modernization of Facilities

It has been estimated that the paper and pulp industry invested 59 per cent of its capital expenditures in 1958 in replacement and modernization, and 41 per cent in expansion. This figure is expected to hold true for 1959. For the years 1960 through 1962, the mix will change to 62 per cent for replacement and modernization, and 38 per cent for expansion. This is a healthy sign, but I could wish that the emphasis on replacement and modernization were even greater. In the years 1960 through 1962, even if we attain the 62 per cent replacement and modernization rate presently contemplated, we will still lag behind the 65 per cent of plant and equipment outlays that all manufacturing companies, in all industries, are allocating to modernization. It is vital that the paperboard industry update obsolete and worn out plants and equipment. Our profits for the next five years depend less on "how much" than on "how well."

Research & Development

Even more important than physical modernization is the area of research and development . . . the modernization of our methodology, our materials, and our markets.

It has been no accident that despite the impact of the recession on sales and profits, United States business increased its expenditures for research and development in 1958 by 12 per cent to a record $8.2 billion. (See Table I)

However, the measure is the job to be done and the degree of efficiency with which it is approached, rather than a simple comparison of dollar expenditure.

According to a survey conducted by a management consulting organization, only 42 per cent of the companies studied, were stating their development objectives in a formal, systematic, and conscious procedure. The consequence was as we might expect. Fully half of the companies which indicated the greatest satisfaction with their development results had set up formalized objectives in their planning. Of the companies which indicated greatest disappointment with results, only 20 per cent had had formalized objectives. In screening ideas, only about 40 per cent of the companies which participated in this analysis used specific formal criteria. But among the companies which reported best results from their development efforts, approximately 50 per cent used formal criteria. Only 20 per cent of the companies experiencing poor results did so.

In evaluating results of development activity, the disparity was even greater. Only 35 per cent of the total group surveyed used formal arrangements to look at development results. Among the companies which had superior results, 62 per cent used formal techniques. And, again, among the companies which had poor results, there was a substantial drop. In this case only 10 per cent of the companies not satisfied with the results of their developmental activity used formal techniques in evaluating.

It is not enough merely to appropriate dollars for research and development. Nor is it sufficient to appoint a research and development manager and feel that management's responsibilities have been met. Our research and development programs must be as carefully planned and charted as our manufacturing operations. Indeed, it would be a wonderful thing if we had a standard for research and development roughly comparable to the familiar "operating rate" of daily production.

TABLE I

EXPENDITURES FOR R & D BY THE PULP AND PAPER INDUSTRY, AS COMPARED TO BUSINESS AS A WHOLE.

Year	P & P (millions)	Bus. (billions)
1958	52.8	8.2
1959	57.0	9.0
1962	71.3	10.6
(% increase over 1958)	35%	30%

Plastic Packaging

In 1958, packaging industry volume was a little less than one per cent higher than for 1957. This year, packaging volume will better 1958 and at least equal, and probably exceed the previous record volume of 1956.

The impressive totals could never have been achieved without the contributions of the various forms of flexible, semi-rigid, and rigid plastic packaging. However, too much emphasis, in my belief, has been placed on the plastics industry as competitive with ours. We need not concern ourselves that various forms of

plastics are likely to replace board as a primary packaging material. If that unanticipated situation should ever prevail, it would be primarily the consequence of our own lack of foresight and errors of omission. These are eventualities I do not fear.

We must ask ourselves why some of us have viewed the progress of plastics in packaging with such alarm. Is it because plastic packaging does the more efficient, near-universal job that would be necessary to displace paper packaging? Is it because plastics are basically less expensive packaging materials? It seems unlikely, since in 1957, the most recent year for which I have comparative data, only six per cent of the dollar volume represented by all packages was accounted for by plastic packaging. This figure includes films. Paper and paperboard containers represented seven times as great a volume, or 42 per cent of all packages. Paper packaging, in my opinion, will continue to be the lowest-cost container available to industry for a long time to come.

Not too many years ago, some of us in the folding box business were resisting the window box with its excellent product display feature. Simply stated, we were unrealistic.

We know today that there are places for window boxes . . . that there are situations where all-film packaging will do a better job than board in any form . . . and that there still remains a panorama of folding carton opportunities greater than at any other time in the industry's history.

It is necessary for us in the paperboard industry to re-examine ourselves and our product. We must look past the traditional form and working characteristics of paperboard and ask ourselves how we can better shape it to the needs of our market.

The greatest economic trends of this decade, and almost certainly the years to come, are convenience, color, and disposability. How much, for example, have we achieved in these areas as compared with manufacturers of other packaging materials?

I am not unmindful of the merits of semi-chemical pulp, stretchable paper, and bleached kraft board, all relatively recent developments in our industry. Nor do I look past the continuing improvements in quality of cylinder and fourdrinier board or the outstanding achievements of those of us producing boxes and cartons. Compared with the rate of product development in the plastics industry, however, our pace does seem to have been relatively a leisurely one.

Food Packaging

The food industry is our biggest customer. See what is happening here. An estimated 50 per cent of food products on store shelves today were not there eight years ago. Food manufacturers themselves report that new product development has accelerated from three to ten times what it was ten years ago. Depending upon the company, the value of items added since World War II represents from 11 to 35 per cent of total sales.

This year alone, 77 per cent of food companies plan to bring out new products or improved versions of current items. Often the so-called new product fundamentally is a new package concept. Of all research dollars in the food industry, 47.6 per cent will go for new product development this year. More instant foods seem certain to emerge. More vending machine foods also. The variety and quality of dehydrated foods will improve. The freeze-drying field is reported to have under development some eventual candidates for the supermarket best-seller list.

We do not have to wait until tomorrow to find opportunity. A study of some 1,200 national advertisers made within the last year indicated that 54 per cent of these major users of packaging materials were dissatisfied with their present packaging.

Plastics are not likely to replace board as a packaging material. If that should ever prevail, it would be due to our own lack of foresight and errors of omission.

New Product Development

A major part of our daily job is to operate our existing equipment to capacity. Nevertheless, one of our prime marketing functions, in the paperboard industry as in any other today, is new product development. In planning ahead, we cannot simply follow the old thought groove of present plant facilities, present manufacturing processes, present types of equipment, present products.

The new competition from solid bleached boards is, in my opinion, in the long run again a boon rather than a hurdle for manufacturers of cylinder board. Cylinder and fourdrinier boards each have distinctive advantages. The growing market for paperboard packaging will be large enough to absorb our output of both. The friendly rivalry that has developed will contribute to the up-grading of both board types.

The folding carton business is an excellent example of the continuing implications of change. Such developments as the increasing use of bleached kraft board, the continuing growth of flexible film packaging, the rapid rise of blister and skin packaging, the new markets opened by multi-packaging, are all of obvious interest to us. But change is not limited to our own operations, our own sources of supply, and our own markets. In our intricately interdependent economy, changes in other industries also affect our own. The use of disposable tableware to eliminate dishwashing has been predicted. Will it be made of paper, plastic, or both? How much and what kinds of board will it consume?

Houses may be built of foamed plastic. How may this affect the market for construction boards?

A talking typewriter is reported to be on the way . . . a machine which can be talked into and which types what is said. What a universal helpmate that will be.

In this dynamic and changing industrial environment surely we cannot afford to make decisions and initiate action in the light of current operating circumstances alone. Vision is needed more urgently now than at any time since our industry's beginning.

The profit picture, unfortunately, is not as promising. We have been unable to raise prices and improve productivity sufficiently to keep pace with rising costs.

Marketing

Scientists have discovered that too much sleep induces sleepiness. Despite our 30 per cent gain in tonnage over 1958, and in the face of our current near-capacity production, we still must make certain we have not been dozing in the vital area of marketing.

No less an authority than Dr.

Reavis Cox, president of the American Marketing Association, has stated that in spite of all that has been said of increasing marketing costs, available evidence indicates that since 1900, the proportion of the consumer's dollar being taken by marketing has, at most, held steady, and may even have decreased a bit.

Our distribution techniques, of which packaging is a vital part, have helped make possible savings on so tremendous a scale that consumers can afford to pay large amounts of money to indulge their well-being and still, in terms of utility received per dollar, come out ahead.

Manufacturers, as we know, now spend well over $15 billion yearly on packaging. To this, they (as well as wholesalers and retailers) add their mark-ups. This means that consumers are paying more than $25 billion for packaging this year.

Housewives today are constantly looking for something new that suits their new way of life. They respond quickly to products that simplify or eliminate their daily chores. They willingly pay a premium for convenience. Under these circumstances, package costs can amount to as much as 99 per cent of total product cost.

Our population is growing at a rapid rate. We are about to experience a boom in younger age groups who represent our most active market for food, clothing, sports, amusements and hobbies. About 114,900,000 of us are under 40 years old. So almost 65 per cent of our population is still in what could be described as the Age of Acquisition.

Our way of life increasingly places emphasis on saving time and saving space. Convenience is an ever-more-valuable commodity. For the packaging industry these consumer wants are the equivalent of daily vitamin pills.

Salesmanship

Our sales organizations generally are well trained in manufacturing procedures. They are less skilled in their ability logically and analytically to understand their prospects' marketing problems. Presently they are at an even greater disadvantage in discussing comprehensively the comparative merits and shortcomings of packaging other than paperboard.

Among our larger customers today, everyone connected with marketing programs has a vital interest in packaging. I include top management, advertising agencies, and package designers as well as the purchasing directors, packaging technicians and other middle management groups with whom so many of our representatives have dealt almost exclusively. We must recognize that more so every day, the successful paperboard salesman is a man equipped to deal with his customers' marketing problems almost as skillfully as he is with his own sales quotas.

The paperboard industry must support its selling organization with an advertising and promotion program that speaks the same language of marketing as its personal sales representatives. It has been the custom in our field to assume that intensive advertising and promotion are the primary responsibility of box and carton people. Perhaps they are. But nevertheless our success depends upon our converters' ability to move our product. The more assistance we can give them in predisposing their customers toward board rather than some other packaging material, the stronger their position and ours.

Our sales organizations are less skilled to logically and analytically understand their prospects marketing problems . . . in discussing comprehensively the merits of packaging other than paperboard.

We must recognize that the introduction of new ideas, whether it be through advertising, sales promotion, public relations or personal sales calls, requires time. Even selling an accepted product, 80 per cent of all sales are made on the fifth sales call or later. The introduction of a new idea or product may require as brief a time as six months, or as in the case of some ultimately successful products, as long as 13 years.

We probably will find it necessary to achieve a greater degree of integration. Some of our leading mills have declared that the reason they went into their own converting businesses has been because they have been able to open and develop markets faster this way than if they waited for independent converters.

One large national company, for example, has made 15 or 16 acquisitions during the past five years, most of them in the folding, set-up box and corrugated container fields. Another has acquired 17 companies, primarily converters of corrugated board. Still another, known primarily as a lumber producer, now has a quarter of its sales in paper and paperboard and another quarter in cartons and containers. It operates 34 milk carton, corrugated box and folding box converting plants.

Similarly, some of the independents who have heretofore confined themselves exclusively to converting are moving into the manufacture of paper to insure their supplies of raw materials and to reduce selling costs.

Conclusion: The Challenge

In the final analysis, we can call upon specialists to identify and measure the opportunities. We can retain other experts to provide assistance in their own localized areas. But the final responsibility for decision still remains ours. And rightly so.

I recall a study I saw some time ago of the elements that made for success in business management. Surprisingly, there were only two. One was single-mindedness of purpose. The ability to concentrate on an objective and see it through, come what may. The other was the willingness to make decisions and act upon them.

These standards apply equally to those of us charged with guiding the destinies of the paperboard industry. This is the time to regain the initiative.

The challenge before us, gentlemen, is this:

1. Increase substantially the per-capita consumption of paper and board.
2. Control costs without penalizing our sales efficiency.
3. Enlist plastics as an ally, to the betterment of that industry and our own.
4. Use our market development appropriations realistically, and on a definite time-table.
5. Regard imaginative marketing as the keystone of our business, and make our customer the most important personage in our planning.
6. Act courageously and decisively, in the tradition of the years of our industry's greatest growth.

It is a challenge I confidently expect we will meet and master. We can accept, I think, that the outside factors which have depressed industry profits will continue to operate. But, there isn't one of us, I am sure, who believes that the present per-capita consumption of board represents anything near our potential. The horizons for paperboard, gentlemen, were never brighter.

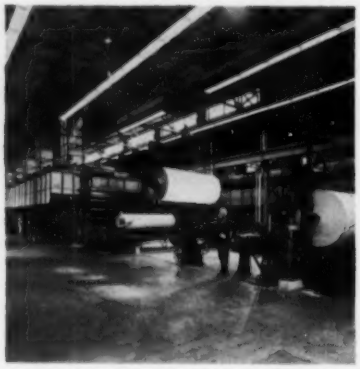
SONOCO Durolene

paper mill cores out perform all others . . .

SONOCO Durolene paper mill cores deliver super-performance; are unequalled in torque strength, have ultra-high crushing strength and possess greater scuff resistance. Here are four reasons for these outstanding qualities—

RESEARCH is the basis for all SONOCO paper mill cores. Durolene strength is the result of this exhaustive research and product development.

QUALITY CONTROL is rigidly maintained from raw material and through all phases of manufacture to finished product.



MODERN EQUIPMENT includes nine of the industry's most modern paper machines—each geared to precision production.

SKILLED PERSONNEL is the key to SONOCO uniform quality. SONOCO has nearly 60 years' experience in the manufacture of paper and converting it into quality products.

1403

If you require an economical paper mill core with exceptional strength, designed for long and efficient service — order SONOCO Durolene! SONOCO can also supply you with economical Duro returnable and non-returnable cores.

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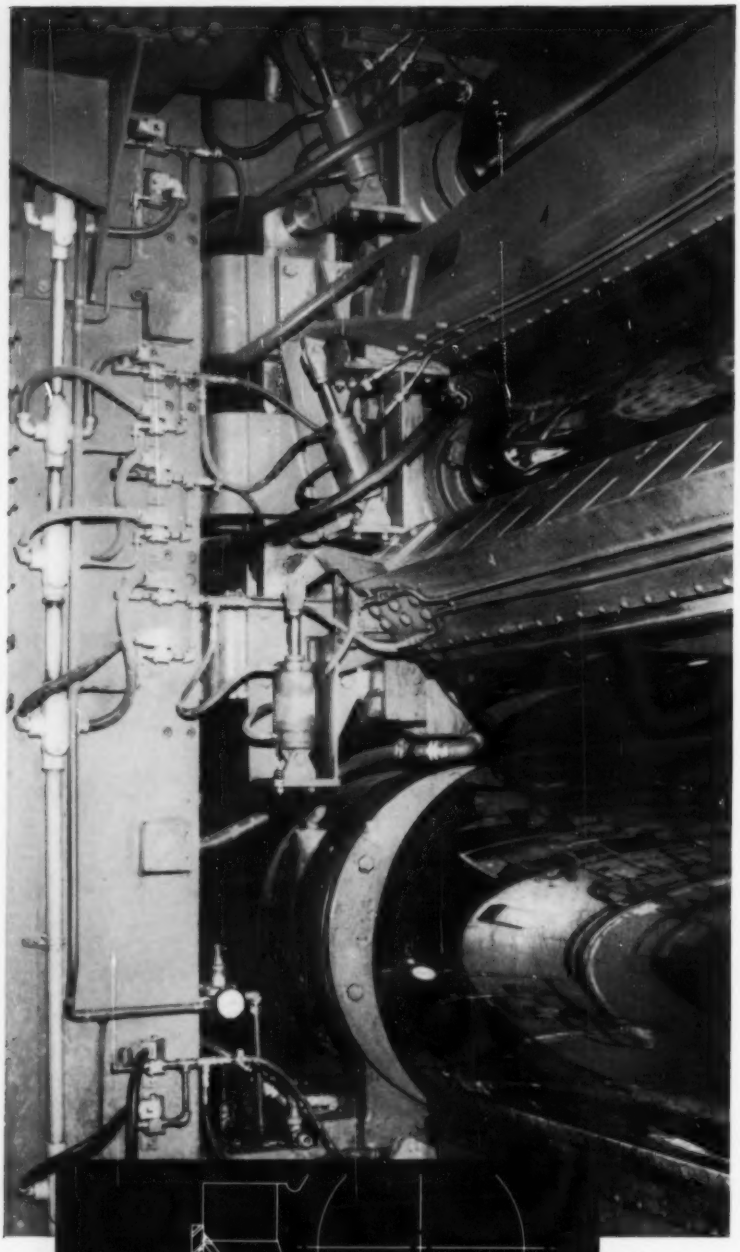


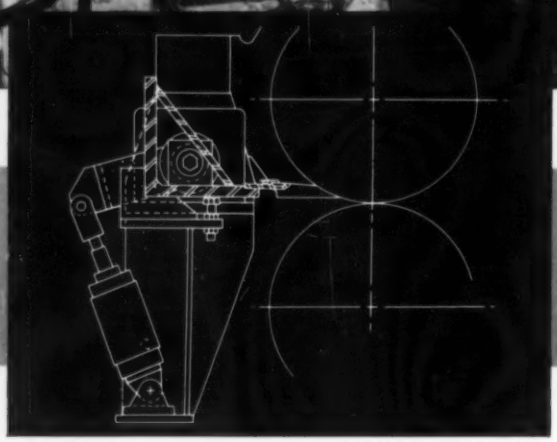
Clean rolls and Lodding Doctors

CLEAN ROLLS go hand in hand with Lodding Doctors. Mills throughout the country and many abroad have found this to be so — just as in the installation of calender doctors at the Chillicothe Paper Company.

There's good reason for such universal reliance on Lodding. Most mills prefer to turn the intricate problems of doctoring over to specialists, where *each* doctor is custom engineered and precision built for *each* machine roll application.

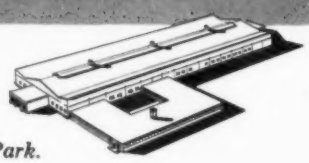
Calender rolls are among the most difficult to doctor properly, yet among the most important. Thirty years of specialized experience with thousands of calender doctor applications stand behind Lodding's ability to lick even the most exacting problems presented.

For example, Lodding Calender Doctors are designed for mounting on the roll bearing housings to enable the doctor to ride with the roll at all times. This provides constant, uniform blade pressure with perfect alignment to the axis the entire face length of the roll. Doctor backs are built to individual specifications to provide the necessary strength and rigidity and, among other factors, to compensate for the roll crown. Clean nips result, allowing a free course for the sheet.



If proper calender doctoring — any other roll doctoring — is your goal, better specify Lodding.

LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS



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UNITED ENGINEERING AND FOUNDRY CO.
948 FORT DUQUESNE BOULEVARD
PITTSBURGH, PENNA.

Pulp and Paper Industry Progress In Atmospheric Pollution Control

Nicholas J. Lardieri,
New England and Middle Atlantic Resident Engineer,
National Council for Stream Improvement, Inc.,
New York 16, New York

The pulp and paper industry has made significant progress with respect to atmospheric pollution control over the past several years. This has been evidenced by the accelerated effort many mills have made in further reducing the atmospheric discharge of contaminants, and to the joint research and development program on the problem undertaken through the National Council for Stream Improvement of the Pulp, Paper, and Paperboard Industries, Inc.

The industry, therefore, has not been caught unawares by the greatly intensified public interest in the subject, which was stimulated by the National Conference on Air Pollution called by the Surgeon General in November 1958. A few of the more significant recommendations of that conference were as follows:

1. The extension and expansion of the Federal Air Pollution Act with the elimination of the expiration date and appropriation ceiling;
2. Increased attention to recruitment and training of qualified personnel in technical fields related to air pollution;
3. Expansion of research to determine the health effects of pollutants;
4. Additional research to devise effective control methods for various types of emissions, with particular attention to problems of automobile exhausts;
5. Increased research to develop more effective and economical instruments and methods for monitoring and analyzing pollutants;
6. Endorsement of the policy contained in the Federal Air Pollution Act in regard to the responsibilities of State and local air pollution control agencies, as well as industry and other institutions, in formulating and carrying out abatement programs;
7. Increased attention to education of the public on air pollution problems.

It should be noted that the words, "increased," "additional" and "expansion," appear prominently in these recommendations and indications from state houses now in session are that the flood of proposed air pollution legislation continues unabated. In recent weeks, bills have been introduced in such sparsely settled areas as Montana, Idaho and Arizona.

The National Conference placed much emphasis on statistics which indicated a possible link between cancer and other diseases and urban air pollution. Due to the fact that most of the pulp and paper industry is located away from these urban centers, it would not appear that this situation is of immediate concern. The heightened awareness of the general public to atmospheric pollution matters, which is bound to result from these vast governmental programs however, will undoubtedly call attention to all emissions, whether public health considerations are involved or not. It would not be surprising, therefore, that within several years atmospheric discharges will be under the same type of regulation as are liquid waste discharges today.

The pulp and paper industry has been making significant progress with respect to atmospheric pollution control over the past several years. The industry, therefore, has been prepared for the greatly intensified public interest in the subject which was indicated by the National Conference on Air Pollution called by the Surgeon General, in Washington, D. C., late last year.

The program in this field is proceeding along several lines. An organized research and development program has been undertaken through the National Council for Stream Improvement, and at the present time, four university projects are concerned with various phases of air pollution control in the industry. There is also considerable work under way by individual pulp mills on control techniques and processes.

This paper reviews the current status of the National Council's program in this field and also describes some recent developments in the control of pulping atmospheric effluents.

National Council Research Projects

This paper will discuss the National Council for Stream Improvement's program in this field. At present, this is progressing at both the university research level and in the field. Under study, are methods of analyzing pulp mill discharges and the atmospheres in the area of discharge. It is expected that field trials on actual control methods will commence within the next several

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months. Some of the new control methods in use within the industry, and the research being conducted on various effluents, will also be reported.

CHROMATOGRAPHY OF STACK EFFLUENTS

Professor Donald Adams and his co-workers at Washington State College have been working on chemical methods for the separation and identification of the various gaseous and aerosol constituents of stack effluents from sulphite and kraft pulping. A gas chromatographic procedure has been developed for the separation of complex mixtures containing hydrogen sulphide, sulphur dioxide, mercaptans, and alkyl sulphides, and disulphides which has potential application to the study of the emissions, both at the source and in the general area of mills. Gas-liquid chromatography is based upon the differential rates of elution of the components of a mixture as they are carried through a solvent column by an inert carrier gas. In this particular work, a new type of column solvent was used which combined the advantages of resolution of mixture components, minimum emergence time, and maximum water retention time to prevent masking of the significant areas of the elution curve.

The main difficulty in applying this method to the analyses of pulp mill gases, at present, lies in the unavailability of a completely satisfactory procedure for the reduction of the large amount of water vapor present in these effluents. A number of methods have been tried, including the preferential absorption of the sulphur-containing constituents on activated charcoal, followed by desorption. Later work has shown that wet streams of hydrogen sulphide and methyl mercaptan can be dried without measurable loss by passing the sample through a column packed with anhydrous calcium sulphate at room temperature or 100°C. Research is continuing along these lines and on the separation of carbon dioxide from the dried process stream.

ADAK ANALYZER

Dr. Adams has also been studying the use of a miniaturized version of the ADAK analyzer, which is a continuous, automatic recorder based on the dosimeter sampling principle (Figure 1). In this unit, a small volume of reagent, sensitive to a particular ion or class of compounds, is circulated continuously in an air-reagent contact system until a preselected level of the pollutant under study is accumulated. Continuous analysis is accomplished in a flow colorimeter. When the preselected concentration has been reached, the instrument automatically discharges the spent reagent and injects a measured volume of fresh reagent. Sampling is then continued until another cycle is completed upon the accumulation of the pollutant during each dosimeter period. The instrument development and initial study were carried out under a contract with the Community Air Pollution Program of the U. S. Public Health Service, and the first applications of the analyzer has been in the determination of sulphur dioxide and hydrogen flouride in the atmosphere. The large-scale analyzer is shown in Figure 2.

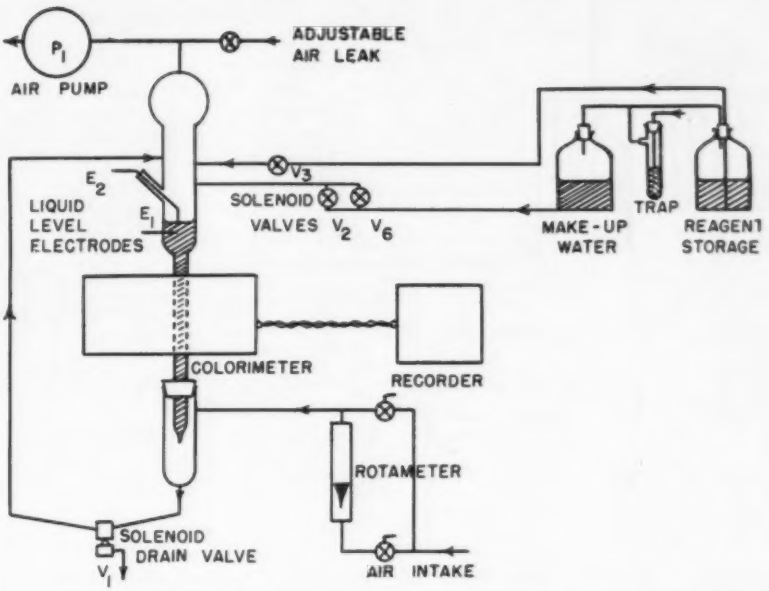

Figure 1: Schematic of MINI-ADAK analyzer. The reagent is circulated in air-reagent contact system until preselected level of pollutant is accumulated. Continuous analysis is accomplished in flow colorimeter.

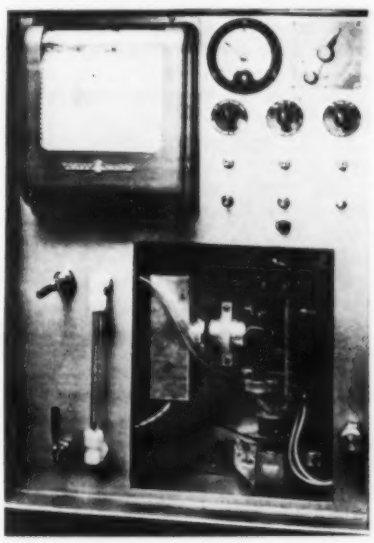

Figure 2: ADAK continuous, automatic air pollutant analyzer-recorder. Analysis is based on dosimeter sampling principle.

Successful application of the analyzer depends upon finding suitable colorimetric analytical methods for the constituents present in pulping effluents. A study of the various colorimetric methods proposed for the determination of hydrogen sulphide, mercaptans and organic sulphides and disulphides, is under way. Lesser emphasis is being placed on the determination of hydrogen sulphide since methods and instrumentation are already available for continuous field analysis.

ANALYSIS OF KRAFT MILL GASES

The University of Florida Project has been working on the development of simplified methods for the analysis of kraft mill stack gases during the year. This work, under the direction of Professor E. R. Hendrickson, has included field tests at a southern kraft mill. The emphasis thus far has been placed on the recovery furnace stack, as this source is generally acknowledged to be of the greatest significance from an air pollution standpoint.

The experimental set-up used to obtain a measure of the particulate matter of sulphur gases, is shown

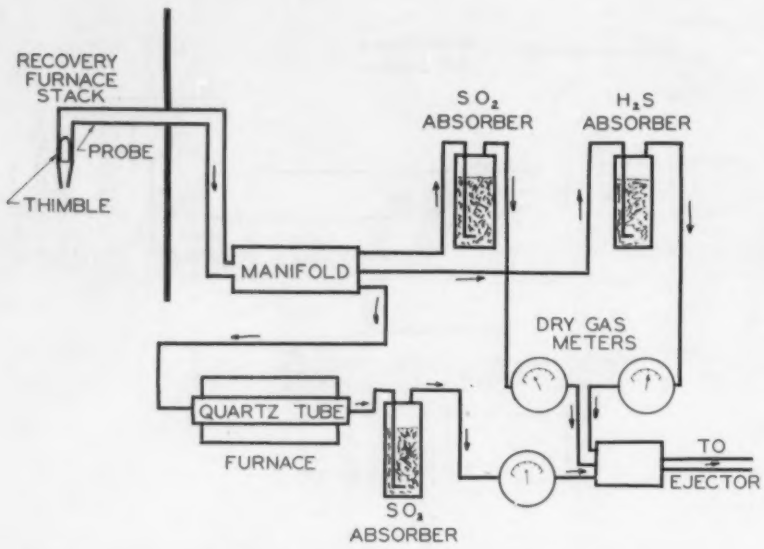

Figure 3: The experimental set-up used to obtain a measure of the particulate matter and sulphur gases emitted from a kraft mill's recovery furnace stack. This source has the greatest significance from an air pollution standpoint.

in Figure 3. The gas stream is sampled through a paper thimble and is then divided into three streams. One stream is bubbled through an acidified zinc acetate solution in which the hydrogen sulphide is precipitated as zinc sulphide. The hydrogen sulphide originally present in the gas stream, is then determined by a modified methylene blue method on a spectrophotometer. The method is sensitive to about 20μg S =/1 with a range up to about 1400μg S=/1. A second gas stream is passed through a sodium tetrachloromercurate solution, from which sulphur dioxide may also be determined colorimetrically. The third stream is first passed through a quartz combustion tube, in which the reduced sulphur compounds are burned to sulphur dioxide, and then analyzed for sulphur dioxide as above. In this way, the total amount of reduced sulphur in addition to hydrogen sulphide, may be ascertained by difference.

Laboratory test work is being carried out to test the efficiency of the above sampling and analytical procedures. Using a test chamber into which known quantities of hydrogen sulphide were injected, collection recovery efficiencies averaged 95 per cent with a standard deviation of 6.8 per cent when a 1:250 dilution of the test solution was made prior to spectrophotometric analysis. The effect of interferences on the methylene blue determination, was studied by injecting known interferences on the methylene blue determination, was studied by injecting known quantities of gaseous sulphur dioxide and methyl mercaptan into the zinc acetate scrubbing solution. Although the methyl mercaptan forms a precipitate in the scrubbing solution, there is no interference from this or the sulphur dioxide. These results were substantiated by laboratory test chamber experiments. With respect to the sulphur dioxide test, no interference was noted when hydrogen sulphide and methyl mercaptan were injected into the scrubbing solution. Collection efficiencies for sulphur dioxide ranged from only 67 to 89 per cent when these compounds were injected into the test chamber. Work is now being conducted on this phase as well as on the total sulphur analysis.

While the above methods are necessary to obtain accurate measures of the amount of contaminants being released from operations, they do not show their distribution nor indicate potential problem areas in the mill environment. That there is a need for establishing levels of contamination around mill areas, was evidenced in a recent court case involving a kraft mill where the preparation of such data by the company was instrumental in obtaining a decision in their favor. A monitoring program using market instruments to continuously measure and record contaminant levels, however, even if suitable for pulping emissions, would involve tremendous financial and manpower outlays when it is considered that the cost of a single unit is as high as $3000-$4000 (Titrilog, Autometer) and that much skilled maintenance is required.

The Council is suggesting, therefore, to a number of mills interested in starting monitoring programs, the use of simplified techniques for obtaining gross patterns of areal pollution. These methods are designed to ascertain the amounts of particulate fallout and also the relative distribution of hydrogen sulphide in an area. Polyethylene fallout collectors are to be used and the jar contents will be analyzed periodically for total solids. Other determinations which may be of value, are calcium, sodium and sulphate. Hydrogen sulphide in the atmosphere will be measured by the darkening which occurs on lead acetate in pregnated tiles. A simple H_2S comparator is being developed to rate the darkening intensity. There are several reasons that hydrogen sulphide was selected for this work. It is generally acknowledged to be the gaseous compound emitted from kraft operations with the greatest potential property damaging characteristics, i.e., house blackening and also a relatively specific simple qualitative method exists for it.

As might be surmised, capital costs of the materials and equipment described above are expected to be less than $1000. Constant supervision is necessary to derive optimum benefits from a program of this nature, and it appears that a full-time employee would be required for this work. It is estimated that such a program will require an outlay of $10,000 per year.

The Council bulletin describing these methods will also include a section on meteorological instrumentation prepared by Admiral A. L. Danis, associated with the Florida project. The collection of weather data by the mill will be necessary, unless such information is available from local airports, weather stations, etc. In addition to providing basic information which will prove helpful in dealing with regulatory agencies or legal actions, another important benefit may accrue from a monitoring program. It is possible that the data acquired may indicate various techniques, such as altering stack height or building configuration which will moderate existing pollution situations. In addition to the University of Florida Project, assistance in this phase of the work is being obtained from the Department of Sanitation of Rutgers University.

BLACK LIQUID OXIDATION

Considerable interest has been shown by the kraft industry in black

liquor oxidation. Basically, this process consists of oxidizing the reduced sulphur compounds in weak black liquor prior to subsequent evaporation and burning. It has been reported that this treatment results in a decrease in the amount of odorous surphur compounds released from the evaporators and recovery furnace, and an overall saving in the amount of chemical make-up required. Black liquor oxidation has been most used in the Pacific Northwest and Canada, but has met with little success when tried in the southern United States. This may be attributed to the severe foaming characteristics of southern kraft black liquors caused by the relatively high resinous content of the woods pulped in that area.

In view of the great interest shown in black liquor oxidation, the Council is planning research work at Louisiana State University on this subject. The work will be carried on by a chemical engineer employed by the Council, and not as a usual university type project. The research is also to include a study of the burning of non-condensable kraft mill gases. A review of the literature on these subjects has been prepared by the Council staff from which it was concluded that both methods have a large potential for the reduction of odorous emissions from kraft operations. It also appears that these processes may be installed with moderate capital expenditures.

AIR POLLUTION CONTROL MANUAL

Air pollution problems are not restricted to that segment of the industry engaged in chemical pulping. In fact, the unfolding regulatory activity in this field indicates that the simpler problems of emissions from solid fuel-fired combustion processes are the first which are being attacked by government. For example, New Jersey has adopted a state-wide code which places restrictions on the discharge of fly ash. The allowable rates of fly ash emission are quite stringent and may require electrostatic precipitators on power boilers in most cases. All installations burning in excess of approximately one ton of coal per day fall under these regulations, and must register their outlet with the Air Pollution Control Commission.

To assist member mills whose only atmospheric discharges result from solid fuel combustion, the Council has engaged the College of Engineering of New York University to prepare an Air Pollution Control Manual. The manual will give methods of compliance with air pollution control code provisions, such as combustion control, air cleaning, and stack gas disposal. There will be a section on the measurement of atmospheric pollutants which should prove helpful to mills required to submit quantitative reports concerning their emission. Also included will be general legislative aspects of air pollution, with examples of state and municipal codes and a directory of state air pollution control agencies in the United States. The New York University Project is under the direction of Professor William T. Ingram, who has had wide experience in this field.

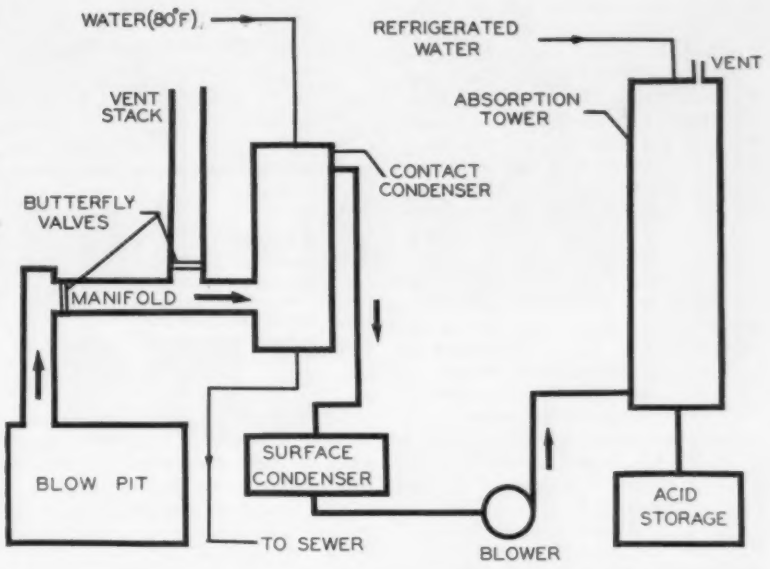

Figure 4: Sulphur dioxide recovery system at Rayonier's Fernandina, Fla., mill. The equivalent of nearly 8 tons per day of sulphur are recovered from the blowpits in a sulphite pulp system producing 370 tons per day.

Field Developments

In a report *(1)* given at the 1958 National Council Annual Meeting, the use of various air pollution control methods practiced in the kraft industry was discussed. Other segments of the pulp and paper industry have also been active in this field. The procedures that have been used in the sulphite and soda industries, will be illustrated below, together with some recent developments in the kraft industry.

SULPHUR DIOXIDE RECOVERY

Perhaps the only objectionable aspect of sulphite pulping from an air pollution standpoint, is the discharge of sulphur dioxide during the blowing of digesters. Figure 4 shows a flow diagram of the sulphur dioxide recovery system installed at the Fernandina, Fla., mill of Rayonier Inc. *(2)*, to control possible nuisances from this soure.

Just prior to the blowing of a digester, the operator presses a remote control button that opens a butterfly valve that connects the blowpit to the gas header, then starts the pumps and blowers by remote control. The blow gases enter the contact condenser where the steam is nearly all condensed by 80°F. water flowing counter-current to the gas stream. Blow gases leaving the contact condenser enter the surface condenser at 150°F., where they are further cooled before being pulled through the blower. Cooling water for the surface condenser flows continuously and is used in the pulp mill.

The compressed gases enter the bottom of the absorption tower and flow upward counter-current to refrigerated water. The recovery acid from the absorption tower is collected in a storage tank during the blow for continuous use in the strong acid tower of the Jenssen type acid plant. Loss of sulphur dioxide from the absorption tower vent is kept below 3 per cent and averages about 1.5 per cent. The sulphur recovered amounts to about 8 tons of sulphur per day as 1.5-2.0 percent sulphurous acid. Approximately 370 tons per day of pulp are produced at this mill.

SECONDARY WET SCRUBBING

Considerable interest has been shown recently in the use of wet scrubbers as secondary treatment

methods for alkaline pulping effluents. The installation of a fog-type scrubber in series with an electrostatic precipitator at a soda mill, has been described. *(3)*. This mill manufactures approximately 225 tons of pulp per day. Operational results of the precipitator - scrubber combination are shown in Table I. The overall recovery efficiency of the units are 98.8 per cent, with the total particulate discharge amounting to only 475 pounds per day, or 2.1 pounds per ton of production. Effluent from the scrubber, which amounts to approximately 25 g.p.m., is reused as wash water in the mud washer of the continuous causticizing system. It was found that this water has a sodium bicarbonate content of 7.7 grams/1 (4.9 grams/1 as sodium carbonate) which is recovered in the causticizing system.

The data on this installation may be used to show that the recovery systems of alkaline pulp mills are highly efficient when viewed from a combustion standpoint. For example, the black liquor burned in the furnace as this mill has a B.t.u. value equivalent to that of approximately 100-125 tons of coal. Installations burning this amount of coal would be permitted to discharge approximately 8000 lbs. per day of fly ash in New Jersey *(4)*. As was mentioned previously, that state has a state-wide fly ash code which is considered stringent and the above effluent could probably only be produced with an electrostatic precipitator. The particulate discharge from the soda mill was shown to be only 475 pounds per day. While these values are not strictly comparable, they do indicate that the law of diminishing returns is probably in effect with regard to further removal of particulate matter from these effluents.

TABLE I

PRECIPITATOR — SCRUBBER REMOVAL OF SODA MILL FUME

Unit	Fume Concentration (Grains/Cu. Ft.) Inlet	Outlet	Efficiency % Removal
Precipitator	2.26	0.203	90.5
Wet Scrubber	0.203	0.027	88.2

Stack Gas Flow	57,150 c.f.m.
Overall Dust Removal Efficiency	98.8 %
Total Particulate Discharge	475 lbs./Day
Pulp Production	225 Tons/Day
Particulate Discharge	2.1 lbs./Ton Production

Wet scrubbers are now being used behind precipitators at several kraft mills, but operational data are not as yet available. There is a growing tendency to use scrubbers on the vent of the dissolving tank in kraft mills and a unit that is being tested is shown in Figure 5. This is known as the Doyle scrubber and was originally developed for use in the metallurgical industries. The incoming gas, containing fume or dust, is brought down to the surface of the scrubbing liquid by means of a downcomer duct, which is so designed that the gas velocity is greatly increased immediately before the gas leaves the downcomer and enters the liquid. The increase in gas velocity is normally achieved by concentrically positioning a streamlined cone at the bottom of the downcomer to give an annular gap.

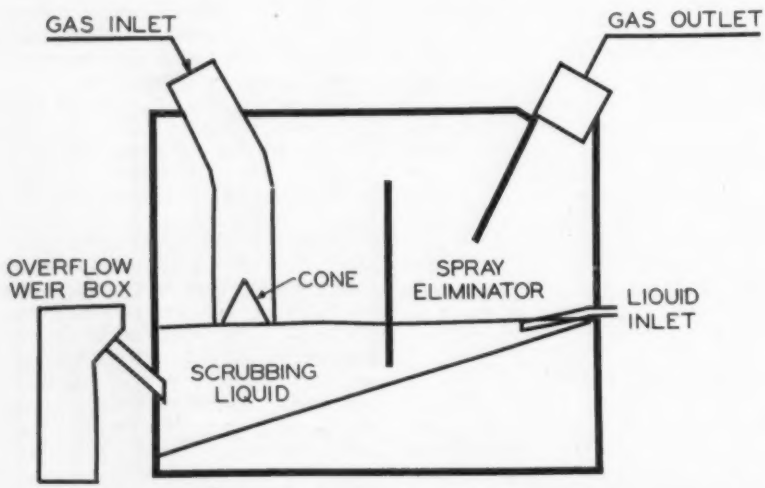

Figure 5: Schematic operation of the Doyle wet scrubber, originally developed by the metallurgical industries. The latest tendency is to recover particulate matter in vent gases emitted from kraft smelt dissolving tanks.

A number of other experimental programs are under way at various locations. These include the use of bag filters for particulate matter recovery and oxidizing of odorous effluents with ozone, etc. These are primarily in the development stage, but results should be expected in the near future.

Summary

The pulp and paper industry has an active program in the field of air pollution control. This program is proceeding at both the university research level and in the field. It has been indicated that the emission of particulate matter from recovery processes is very low when related to the combustion value of the material burned. Efforts to further reduce the discharge are being made by methods such as wet scrubbing. Research is also under way to decrease the amounts of objectionable gaseous emissions. The air pollution problems of solid fuel-fired combustion processes are also being studied by the industry. These efforts should enable the industry to meet successfully the requirements of the rapidly growing regulatory activity in the field.

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(4) New Jersey Air Pollution Control Code, Chapter V, Control and Prohibition of Air Pollution from Combustion of Solid Fuel.

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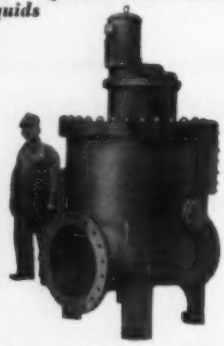

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Kraft, Blchd. Hdwd.	152.00/ —		‡137.00/ —		
Kraft, Semi-bleached.	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l. Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

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3	$7.50/6.50	$7.50/7.00	6.25/5.75	7.00/6.75
4	6.50/5.50	6.25/5.75	5.50/5.00	6.50/6.25
5	5.50/4.50	5.25/4.75	4.75/4.50	5.75/5.25
6	4.50/4.00	4.50/4.25	4.00/3.75	4.25/3.75
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	June 1	June 1	June 1	June 1
No. 1 Mixed Paper	$ 7.00/ 8.00	10.00/ 12.00	9.00/ —	13.00/ —
No. 1 News	14.00/ 15.00	15.00/ —	18.00/ —	18.00/ —
Overissue News (Lg. size)	13.00/ 15.00	12.00/ 14.00	23.00/ —	20.00/ —
Mill Wrappers	19.00/ 22.00	13.00/ 15.00	14.00/ —	15.00/ —
Old Corrugated Containers	24.00/ 25.00	23.50/ 24.00	23.00/ —	23.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	35.00/ —	55.00/ —
New Double Kr. Ld. Corr. Cuts	35.00/ 37.50	37.50/ —	37.50/ —	35.00/ —
(Semi-chem. medium)	47.50/ 50.00	45.00/ 47.50	45.00/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	60.00/ —	60.00/ —
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Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	65.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	95.00/ —
Hd. White Env. Cuts	100.00/105.00	105.00/115.00	90.00/ —	113.00/ —
Col. Tab. Cards	55.00/ 57.50	55.00/ 57.50	52.50/ —	40.00/ —
Manila Tab. Cards	77.50/ 80.00	77.50/ 80.00	75.00/ —	65.00/ 70.00
No. 1 Col. Ledger	40.00/ 45.00	37.50/ 42.50	47.50/ —	35.00/ —
White Ledger	60.00/ 62.50	60.00/ 65.00	60.00/ —	55.00/ —
Mixed Book & Mag.†	25.00/ 28.00	— / —	17.00/ —	— / —
No. 1 Books‡	30.00/ 32.50	24.00/ 26.00	35.00/ —	17.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

Quality

everyone's problem!

Cleanliness, levelness of sheet and uniformity are paramount in producing paper suitable for today's high speed presses and converting machines.

Bauer Centri-Cleaners produce results your customers will notice, and like, immediately. Their unequalled efficiency removes light wood dirt, specks, shives and fine grit before the stock is delivered to the headbox.

Quality need not be a problem . . . just ask your Bauer representative for details, or write for Bulletin P-18A.

Bauer
CENTRI-CLEANERS For Paper and Board Machines

THE BAUER BROS. CO.
1758 Sheridan Avenue • Springfield, Ohio

DOW | CHEMICALS...*for a brighter paper picture*

Old shoes and old methods may be comfortable and temptingly easy to use. But in the cold, searching glare of production cost analysis it's the new or improved technique or equipment which most often walks off with the profit-honors. This is one in a series of advertisements to the paper industry highlighting chemicals and their more effective use in increasing production and improving product properties.

You may wish to check certain items in this advertisement and forward to those concerned in your company.

ROUTE TO:

_____

_____

_____

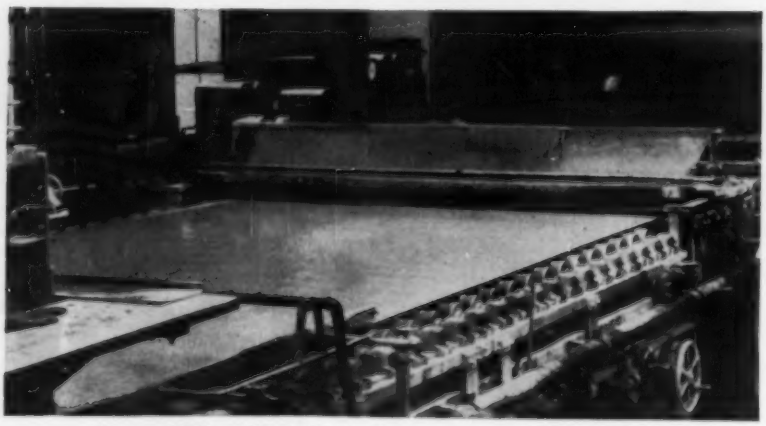
_____

FLOCCULANT BOOSTS FILLER RETENTION... CUTS WHITE WATER SOLIDS, STOCK LOADING

Here's a welcome chemical addition to any paper processing plant . . . and it comes with the finest of user references. It's Separan® NP10, an acrylamide-type polymer that does a bang-up job of rapidly flocculating water-dispersed solids. One outstanding paper process application is increasing filler retention on the wire.

Using a reduced quantity of filler to produce paper with a higher filler content and with increased ash content and basis weight is a neat trick—but it can be done readily when Separan NP10 is on the job! A dilute solution of this highly effective flocculant (in the order of 0.5 lb./ton) added to the furnish just prior to the headbox has been found to allow a cut of as much as 40% from the usual amount of stock filler loading.

One mill, turning out bond paper in weights ranging from 12 to 20 pounds, replaced a standard animal glue with Separan NP10 as filler retention aid. Basis weight of the paper immediately increased by from one to two pounds, ash content increased from 6.47% to 8.20%, and opacity was upped from 86.5% to 89.0%. Filler loadings were then reduced by 25% to bring ash content figures back down to 7.0% resulting in a combined daily cost saving for two machines of $195.00. Other case histories are available which show even more remarkable results in terms of cost savings, mill efficiency and improved quality of product.



Separan NP10 provides both economic and property advantages for paper manufacturers by increasing filler retention at lower filler loadings.

The high retention efficiency of Separan NP10 far overshadows that of any of the other commonly used materials, and its activity reaches a peak at much lower levels of concentration. This organic polymer is in the form of white granules which are readily water-soluble; it may be stored as a stock solution in water without need for a preservative.

The use of Separan NP10 in papermaking furnishes results in the attachment of pigments, size, fiber fines, etc., to the fibers together with some flocculation. This results not only in increased furnish pick-up but in a more uniform dispersion of the components through the sheet, less two-sidedness and better opacities with the same pigment loadings.

Separan NP10 is an improved version of an elder brother Separan 2610. It exhibits substantially greater uniformity, purity and ease of use. Most important, it's being produced in quantities sufficient to supply the needs of

Brochure on Separan NP10 provides clear solutions to water problems.

paper mills everywhere. There's a wealth of information in a brochure entitled "Separan in the Pulp and Paper Industry". We'll be happy to send you a copy.

POLYOLS
Softies add hard-headed profits

Paper manufacturers searching for improved plasticizers, humectants or paper lubricants find it pays to come first to Dow—"the men that make the most of them". In the manufacture of crepe, tissue, glassine, parchment and waxed papers, Dow glycerine—one of the most widely used members of the Dow polyol family—provides the needed softening, as well as helping to reduce shrinkage, and offers extremely low toxicity. Makers of food packaging film also depend on Dow propylene glycol for its highly effective plasticizing action and low order of toxicity.

Dow offers the world's widest line of polyols, including glycerine, diethylene glycol, dipropylene glycol, low molecular weight polyglycols, and many others. In this extensive family will be found softening agents tailor-made to the needs of the paper industry. These dependable chemicals offer a wide range of properties including low volatility, defoaming ability, water solubility, low toxicity, solvent power, lubricity and varying degrees of hygroscopicity.

There's an informative file folder available describing the Dow family of polyols. If you'll ask for a copy of "World's Widest Line of Polyols", we'll see that it gets in the mail to you at once.

"BASIC" VERSATILITY . . . *five kinds of economy*

Dow, one of the country's major producers of caustic soda, provides a choice of five forms for maximum economy in any size operation. Dow caustic is available as solution, solid or flake. Small-quantity users often prefer to work with solid caustic or one of the flaked forms . . . *regular flake*, or the dustless, free-flowing *ground flake*. For those who require large quantities, the 50% or 73% solutions are low in cost and provide the greatest convenience and economy in handling.

Any quantity, from drums to tank cars, can be shipped quickly from any of Dow's four producing plants and nine distribution terminals across the country.

OTHER DOW CHEMICALS
of economic importance

MURIATIC ACID

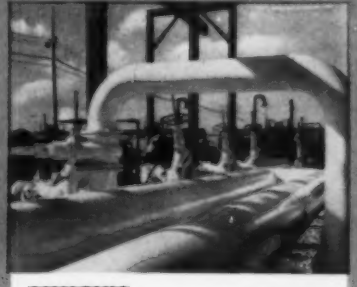
New! Fact-filled handbook about Dow muriatic acid. Full of essential information that makes it an important reference for everyone concerned with pulp and paper processing.

MAGNESIUM HYDROXIDE

Now practically any species of wood can be used as pulping feed. Dow magnesium hydroxide and the new Magnefite process yield high grade pulp, increased digester house capacity.

DOWICIDE

Protect lap stock and coatings against mold growth the *right* way with Dowicide® preservatives. On your company letterhead, write for a copy of the latest technical bulletin.



AMMONIA

Ammonia base cooking still offers cost advantages from a conversion standpoint. Dow assures abundant supplies for present and future needs of the pulp and paper industry.

If you're looking for ways to improve processing operations, lower operating costs and boost product quality, Dow is a good place to start. To find out more about how Dow chemicals and Dow Technical Service assistance can be put to work for you, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Chemicals Merchandising Department 942DP6-8.

DOW CHEMICALS basic to the pulp and paper industry

Chemical Raw Materials • Pulping and Bleaching Chemicals • Preservatives
Plasticizers • Glycols and Derivatives • Methylcellulose • Emulsifiers • Solvents
Aromatics • Caustic Soda • Muriatic Acid • Chlorine • Soda Ash • Ammonia

THE DOW CHEMICAL COMPANY, Midland, Michigan DOW

PJT NEWS OF SUPPLIERS

APPLETON MACHINE'S new research laboratory features several combinations of slitters, winders and other equipment. Shown here, left to right, are a portable core cutter, a bench type rewind slitter and a two-drum slitter and rewinder.

Appleton Machine Co., Appleton, Wis., has established a new research laboratory, designed to study slitting and winding problems. The laboratory's research equipment is capable of slitting material into rolls from a very narrow one-eighth inch up to 60 inches wide. Machine speeds range upwards to 1,200 feet per minute and winders operate on either a single, duplex or surface rewind principle.

Appleton Machine's new service is offered without charge. The laboratory is available to any firm sending in a sample of its material and specifications for slitting and winding. Appleton Machine personnel will conduct the research and make recommendations.

Throughout its 75 years, Appleton Machine has solved almost every type of winding and converting problem from light weight condenser paper to heavy fabrics and rubber. With its new research laboratory, the company will be able to test more complex materials and to extend this service to more industries.

The machines in Appleton's new lab include: score cut slitter, shear cut slitter, razor blade slitter, drum sheeter, combination single rewind and drum sheeter, single rewind slitter, duplex rewind slitter, and core cutter.

Bailey Meter Co. announces the opening of a New Jersey sales office at 110 Halsted St., East Orange, N. J.

The company, whose headquarters are in Cleveland, Ohio, manufactures industrial instruments and automatic controls for the power and process industries.

The New Jersey sales office is under the managership of H. C. Wheaton, who also manages the company's New York district office.

Shuler & Benninghofen, Hamilton, Ohio, manufacturer of the Hamilton felt, has appointed Howard E. Ellis as representative to serve the paper industry in Wisconsin and Minnesota.

Mr. Ellis joins the company after many years' experience in the paper industry, most recently as general superintendent of the Fox Paper Co., Lockland, Ohio.

Adrian Barber, who has represented Shuler & Benninghofen in the Wisconsin-Minnesota area since early in 1958, will continue to represent them in Michigan.

The Bauer Bros. Co., Springfield, Ohio, manufacturers of machinery for the pulp and paper industry, has appointed David M. Shapleigh Eastern division manager. Mr. Shapleigh will personally serve accounts in New York City, New Jersey, Pennsylvania, Delaware and Maryland. He will also assist other Bauer representatives in the Eastern United States.

Mr. Shapleigh has had wide experience in the pulp and paper field. Before joining Bauer in 1957 as sales engineer, he was associated with Brown Co., Berlin, N. H.; P.M.C. Division of Hercules Powder Co., Paper and Industrial Appliances; and Chemipulp Process, Inc. He is a graduate of the University of Maine. He had been serving as acting division manager for Bauer since May of 1958.

Patrick J. Shouvlin has been named to replace Mr. Heard as manager of Bauer's Southern division with headquarters in Jacksonville, Fla. Mr. Shouvlin has been a sales representative with the company since 1949 and assistant to Mr. Heard since August, 1958. Working with Mr. Shouvlin in the Southern Division for Bauer are Herman Fryer, located in Memphis, Tenn., and C. C. Hendricks, located in Brevard, N. C.

D. M. Shapleigh

P. J. Shouvlin

H. E. Ellis

Lloyd Heard

Lloyd Heard has been appointed manager of digester sales succeeding the late C. L. Durkee. He will be assisted in his new assignment by

James Starrett of the company's engineering department.

Mr. Heard came to The Bauer organization August 1958 with his appointment as Southern district manager. Formerly he was project and process engineer with Longview Fibre Co. of Longview, Wash. He is a graduate of the University of Michigan with a degree in Chemical Engineering and a member of the Superintendents Association and TAPPI.

N. R. Dover

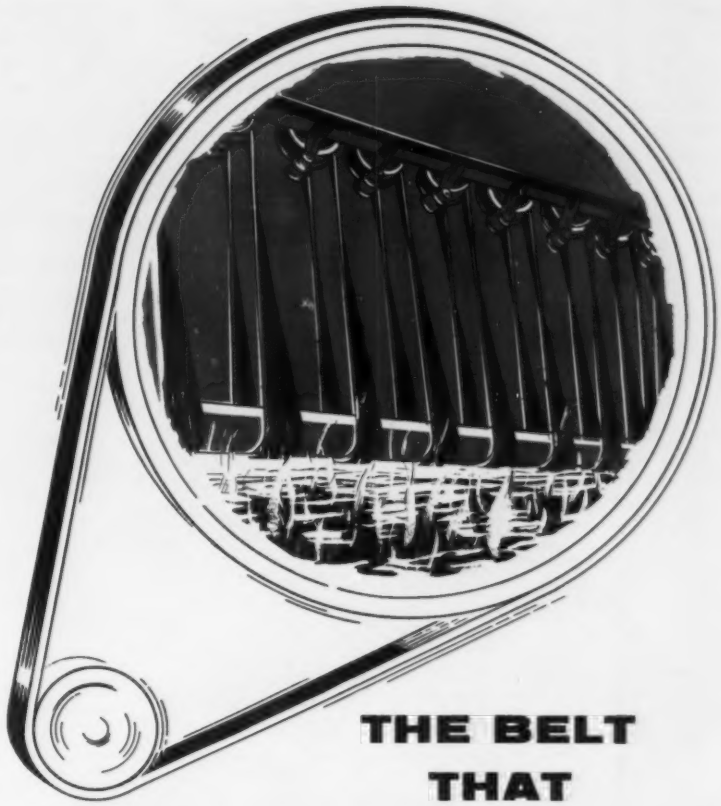
Wisconsin Wire Works announces that N. Roderic Dover has joined the headquarters staff in Appleton. He will be responsible for technical liaison between the mills and Wisconsin Wire Works. A graduate engineer with a broad experience in industry, Mr. Dover will bring the latest technical aid to the mills across the nation.

W. T. Parry

National Starch and Chemical Co. (Canada, Ltd., has announced that Walter T. Parry has joined the company as a technical sales representative handling the promotion of specialty starches and resins to the paper industry.

Mr. Parry's background in the starch and paper manufacturing industries, as well as his knowledge of internal and surface sizes, and his familiarity with mill operations throughout Canada will make him a most valuable addition to its technical staff.

Sandwell International, Ltd., of Vancouver, has acquired an interest in Swan, Wooster Engineering Co., Ltd., also of Vancouver. Swan, Wooster provides consulting engineering and surveying services with particular emphasis in the structural and civil engineering fields, thus expanding Sandwell's professional engineer-



THE BELT THAT RESISTS CORROSION

Scores of case histories prove that Texalon, the all-synthetic belting by Rhoads resists deterioration under wet or corrosive conditions — moisture, salts, greases, many solvents and other industrial chemicals.

You'll get more productive hours from Texalon in many applications for power transmission, carrier tapes or light conveyors. It springs without stretch, rarely needs shortening.

Texalon can be used on small pulleys with high belt speeds and high pulley ratios. Works well on both short and fixed center drives. Easily made endless on the job by untrained mechanics in a matter of minutes.

Belt widths up to 24". Write for bulletin to J. E. Rhoads & Sons, Wilmington 99, Delaware.

Typical Texalon Applications

EMERGENCY BELTING . . . A Pennsylvania mill keeps a supply of Texalon in rolls for use when other belts fail — on rewinders, compressors, pumps, roll grinders, machine drives. It's easily made endless in minutes . . . minimizes down time.

CONVEYOR BELTING . . . A converter uses Texalon tapes as conveyors to pull waxed cartons from the water cooling bath. Tapes run continuously in water without sign of rotting or deterioration. High coefficient of friction means no slipping.

RHOADS

Where the Job Selects the Belt . . . Since 1702

ing and management services on a world-wide basis to pulp, paper and electric power industries.

Minerals & Chemicals Corp. of America has announced the appointments of W. E. Welliver and Thomas C. Morganstern as regional technical sales representatives to the paper industry. These appointments will further extend the company's technical service in the application of Edgar coating and filling clays.

Mr. Welliver holds a Bachelor of Science degree from Pennsylvania State University and a Master of Science degree from the University of Illinois with primary fields of study in clay technology and mineralogy. Mr. Welliver's previous experience in the coating research and manufacturing departments of the New York and Pennsylvania Co. equips him to serve paper manufacturers in the Midwest from headquarters in Wisconsin.

Mr. Morganstern holds a Bachelor of Science and a MBA degree from the Babson Institute of Business Administration. He was formerly associated with the A. E. Staley Manufacturing Co. as a field representative serving paper manufacturers and converters.

W. E. Welliver

T. C. Morganstern

Mr. Morganstern's past experience in the printing paper field qualifies him especially well to serve Minerals & Chemicals' customers in New England from offices in Wellesley Hills, Mass.

Frank Venn

Woodpulp Inc., Chrysler Building, New York, announces that Frank J. Venn joined this pulp sales company on June 1st in a sales-traffic capacity. Mr. Venn has had 17 years experience in the sale and distribution of pulp and paper. For the past two years he has served as chairman of the Traffic Committee of the American Wood Pulp Importers Ass'n.

R. M. Hatfield

Combustion Engineering, Inc., has appointed Robert M. Hatfield, formerly vice president in charge of manufacturing, vice president and general sales manager in charge of domestic sales. He will report to Donald S. Walker, vice president and director of sales.

Mr. Hatfield is an engineering graduate of Purdue University and joined Combustion in 1934. He served as assistant general sales manager and general manager of the western division before being elected a vice president in February 1952.

CIBA

NEW "PAPER-PROVED" MONEY VALUE FOR BLEACHED GRADES...

CHLORANTINE® FAST BLUE P-8GLL

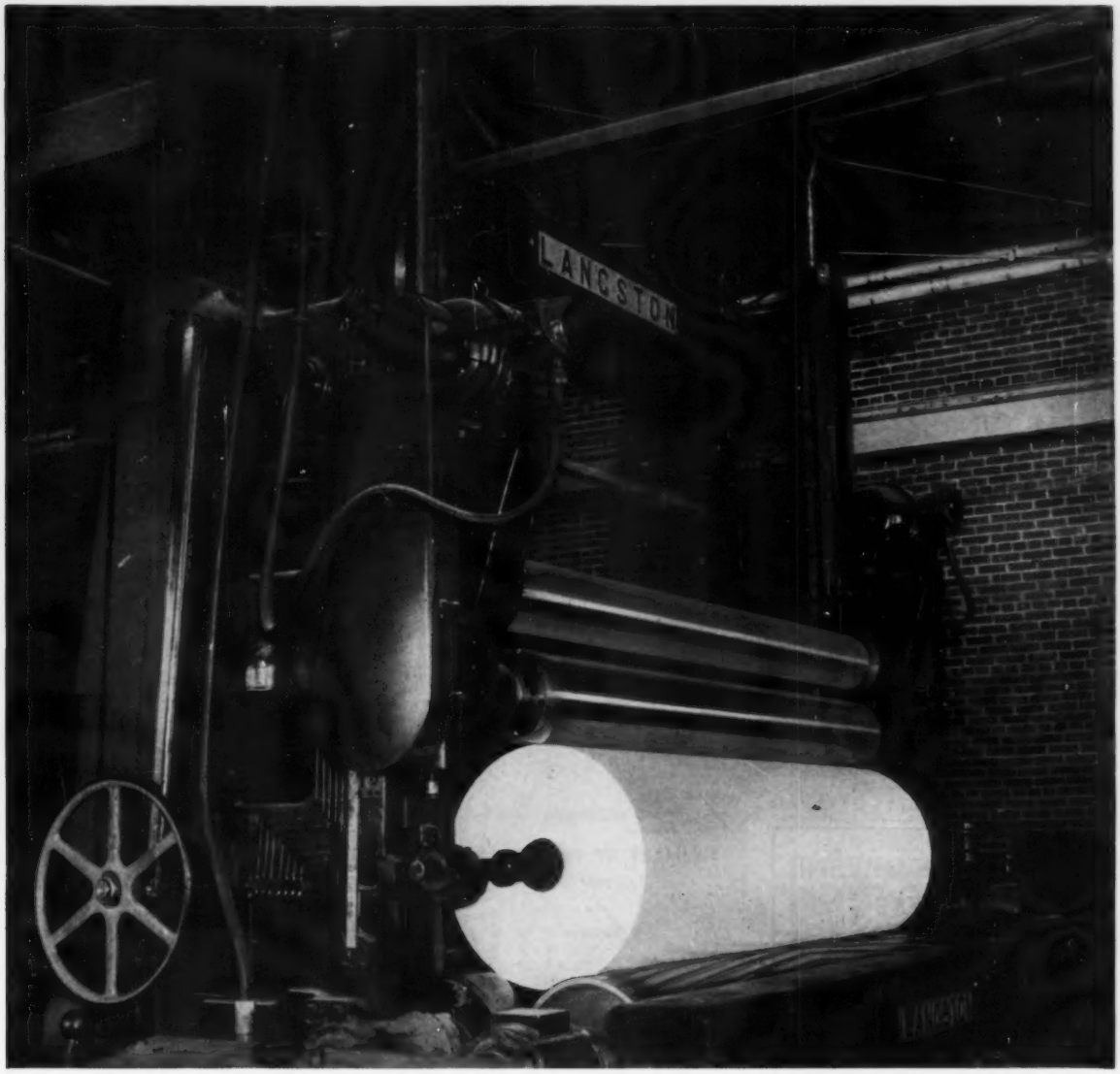
Mill usage of this bright attractive color in bond, offset, mimeo and manifold grades produced from bleached sulphite, bleached neutral sulphite semi-chemical and bleached sulphate pulps has repeatedly shown marked economy in formulations for blue and green shades.

Chlorantine Fast Blue P-8GLL is somewhat greener in shade than our Direct Brilliant Sky Blue P-6B Ex. Conc. Its shade and strength permit partial replacement of the more expensive Alizarine Sapphire Blue types to effect appreciable economy without undue loss of brilliance.

Chlorantine Fast Blue P-8GLL possesses excellent light fastness, good fastness to water, acid and alkali, and is easily discharged with hypochlorite solutions. It is recommended for dyeing appealing blue shades of good brilliance on specialty converting papers ranging from tabulating card and file folder stocks to facial, facial toilet and napkin tissues.

We shall be pleased to furnish information on mill-proved formulations showing marked cost reduction over dyes in general use for many blue and green shades.

CIBA Company Inc., Paper Chemicals Department
Fair Lawn, New Jersey



Langston Slitter and Winder features precision roll density control

Here's a way for you to get uniform roll density from the core to the outside. This type "DH" Slitter and Winder features hydraulic rider roll control that automatically adds or subtracts rider roll weight.

This arrangement makes it possible to constantly maintain correct nip pressure to compensate for the changing diameter and weight of the rewound roll. A simple valve permits setting the correct rider roll weight for various grades and basis weights of both paper and board.

Pushbuttons for raising and lowering the rider roll during threadup replace complicated chains, sprockets, and bulky counterweights, thus speeding up production by reducing setup time.

Learn more. Write SAMUEL M. LANGSTON Co., 6th & Jefferson Sts., Camden 4, N.J.

LANGSTON Leadership...by design

CHAS. T. MAIN, INC.
ENGINEERS
PROCESS STUDIES, DESIGN, SPECIFICATIONS, CONSTRUCTION SUPERVISION
PULP AND PAPER MILLS
STEAM, HYDRAULIC AND ELECTRICAL ENGINEERING
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CHARLOTTE, NORTH CAROLINA

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of Economic Growth
Rust has designed and constructed plant facilities increasing pulp and paper production. Ask for details.
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Steam, Electrical, Water, Waste Reports, Appraisals
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NEW YORK BOSTON

Serving Timber Industry since 1910
Timber Estimators and Foresters
C. D. SHY & COMPANY
1130 Commerce Title Building
Memphis 3, Tennessee

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Apr. 25	May 2	May 9	May 16	May 23
1959	95.4	95.1r	95.9r	97.2r	93.3
	Apr. 26	**May 3**	**May 10**	**May 17**	**May 24**
1958	88.1	89.5	87.2	87.9	85.7

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	87.8	90.5	93.2‡	94.4‡	—	—	—	—	—	—	—	—	—
1958	86.9	89.5	89.5	88.4	87.2	87.2	75.3	89.6	86.5	91.6	90.4	78.1	87.1

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1952	1953	1954	1955	1956	1957	1958	1959
Year to Date	94.5	94.3	93.8	95.8	101.4	95.2	87.6	91.9
Year Average	88.6	92.3	91.6	94.0	97.9	90.9	87.1	—

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Apr. 25	May 2	May 9	May 16	May 23
1959	93	94	94	96	95
	Apr. 26	**May 3**	**May 10**	**May 17**	**May 24**
1958	81	81	86	87	85

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	86	93	95	93	—	—	—	—	—	—	—	—	—
1958	80	86	88	84	84	86	76	93	90	95	92	81	86

† *Percents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING May 23, 1959	LAST WEEK ENDING May 16, 1959	CUMULATIVE TO DATE Jan. 1 to May 23 inc., 1959
% Activity	95%	96%	93%
TOTAL	317,985	322,778	6,167,231
Liner	121,103	108,151	2,104,815
Corrugating Material	46,383	49,997	935,092
Chip & Filler Board	4,346	5,106	101,829
Total Containerboard	171,832	163,254	3,141,736
Folding	56,621	61,202	1,146,892
Set-Up	12,532	11,644	237,533
Special Food Board	27,624	29,710	574,413
Other	49,376	56,968	1,066,657
Total Boxboard	146,153	159,524	3,025,495
Total Orders			
Received	297,960	282,974	
Unfilled End of Week	468,806	485,085	

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	1 yr.	2 yrs.	3 yrs.
Paper & Pulp Mills, Converters and their Personnel	$5.00	$8.00	$10.00
United States	7.00	11.00	14.00
Canada and U. S. Possessions			

All others than above, price per year: U.S.: $7.50—Canada and U. S. Possessions: $10.00.

Alpha® Protein...

to get all that the camera saw...on paper

All the alluring beauty first captured by the camera is faithfully recorded here . . . by the unexcelled quality of Alpha Protein-processed paper. Fidelity of reproduction is reflected in each strand of hair, each subtle flesh tone.

Every day, more coating mill operators are specifying Alpha Protein—the largest-selling adhesive for high solids coated offset paper. Reason: they want the controlled product quality, faster machine speeds, higher coat weights, reduced costs—and better-satisfied customers!

Alpha Protein extra high solids coatings permit faster machine speeds with production upped 15 percent in many cases. Investigate the application of Alpha Protein in your coating operation—it can pay you well!

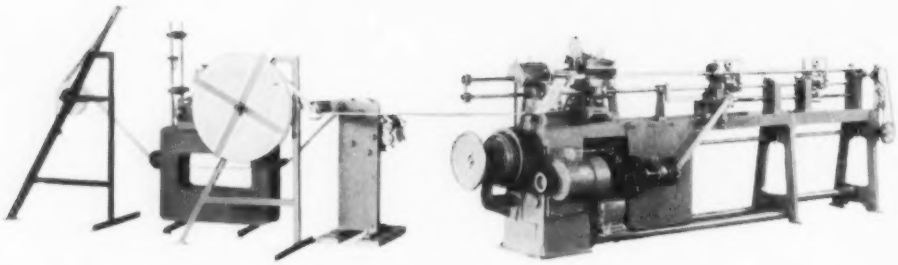
CENTRAL SOYA COMPANY, INC.

Chemurgy Division

1825 N. Laramie Avenue • Chicago 39, Illinois

This advertisement reproduced on Alpha Protein-processed paper

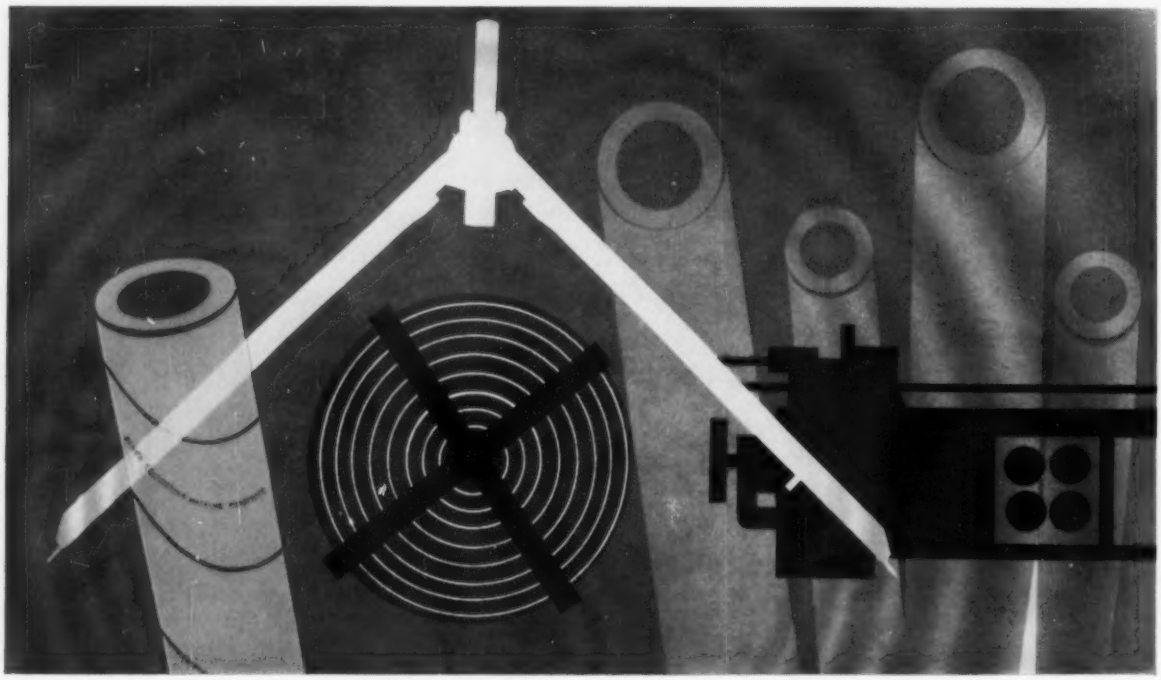
Creative engineering and development of converting machinery



New mechanical Core Machine — up to 200 feet per minute! A completely new mechanical core machine just developed by Paper Converting – Model 2330 – operates efficiently at high speeds, 180 to 200 feet of core per minute. Variable cut-off lengths are possible with score-cut clean ends as required for automatic core loaders. An optional one-color flexographic press is available for product identification. A wonderful new example of PCMCo's *creative* engineering . . . the kind that builds better production answers into converting machines.

PAPER CONVERTING MACHINE COMPANY · GREEN BAY, WISCONSIN

Folders, Rewinders, Embossers, Napkin and Core Machines, Letterpress and Flexographic Presses, Special Converting Machinery



This advertisement reproduced on Alpha Protein-processed paper

Pulp Paper and Board Mill Maintenance

Based on actual in-plant experience and prepared by well known men in the paper industry, this 126 page book brings you in easy to read language procedures for plant maintenance of kraft mills, semi-chemical mills, bleach plants, fourdrinier and cylinder machines, stock preparations equipment, and other machinery used in pulp and paper making. Price $2.50.

Contents

How to Organize a Better Maintenance Department 7
Planned Maintenance is Productive Maintenance 11
The Consultant's Role in Paper Mill Maintenance 14
A Drafting Board Can Reduce Your Maintenance 16
Maintenance Problems of the Smaller Mill 18
Let's Put Lubrication in a New Perspective ... 20
What an Engineered Lubrication Program Involves 22
Take Care of That Cable 27
What a West Coast Mill Does About Woodroom Maintenance 28
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LOCKWOOD TRADE JOURNAL COMPANY, INC.
49 West 45th Street, New York 36, N. Y.

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☐ Payment Enclosed

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FOR EFFECTIVE REMOVAL OF

Residual Chlorine

TC TENNESSEE CORPORATION

LIQUID SULFUR DIOXIDE

Tennessee's Liquid Sulfur Dioxide is a most efficient and economical anti-chlor. Removes residual chlorine and other materials which cause color reversion or yellowing with age. It also eliminates excessive residual chlorine in water.

LIQUID SULFUR-DIOXIDE HIGHEST QUALITY SO_2

Available In:

- CYLINDERS
- TANK TRUCKS
- TON DRUMS
- TANK CARS

We would like to consult with you on the possibilities of Tennessee's Liquid Sulfur Dioxide in your processing

TENNESSEE TC CORPORATION

617-29 Grant Building, Atlanta, Georgia

DORR-OLIVER® equipment chosen by Georgia-Pacific

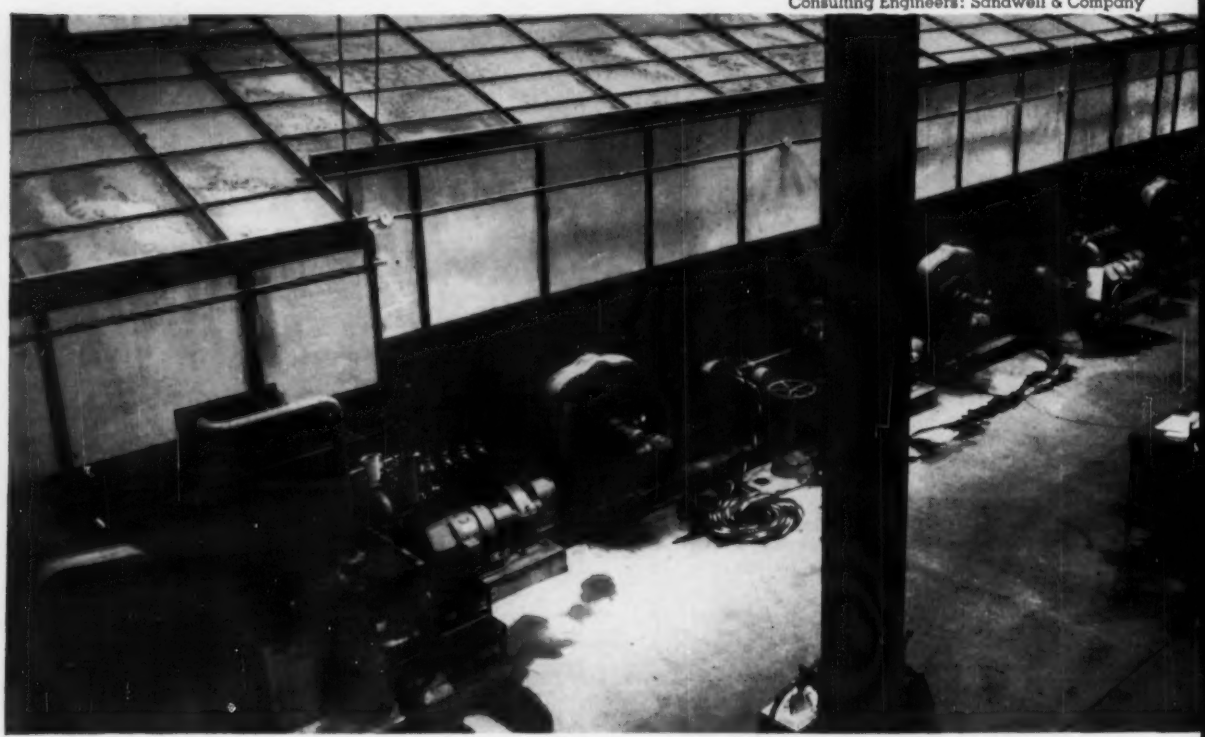
. . . helps meet high production standards in West Coast's newest kraft pulp, paper and board mill

Built to utilize wood waste resulting from extensive lumber and plywood operations, Georgia-Pacific's new kraft mill at Toledo, Oregon, is a logical development of the company's policy of diversification and maximum use of its forest resources.

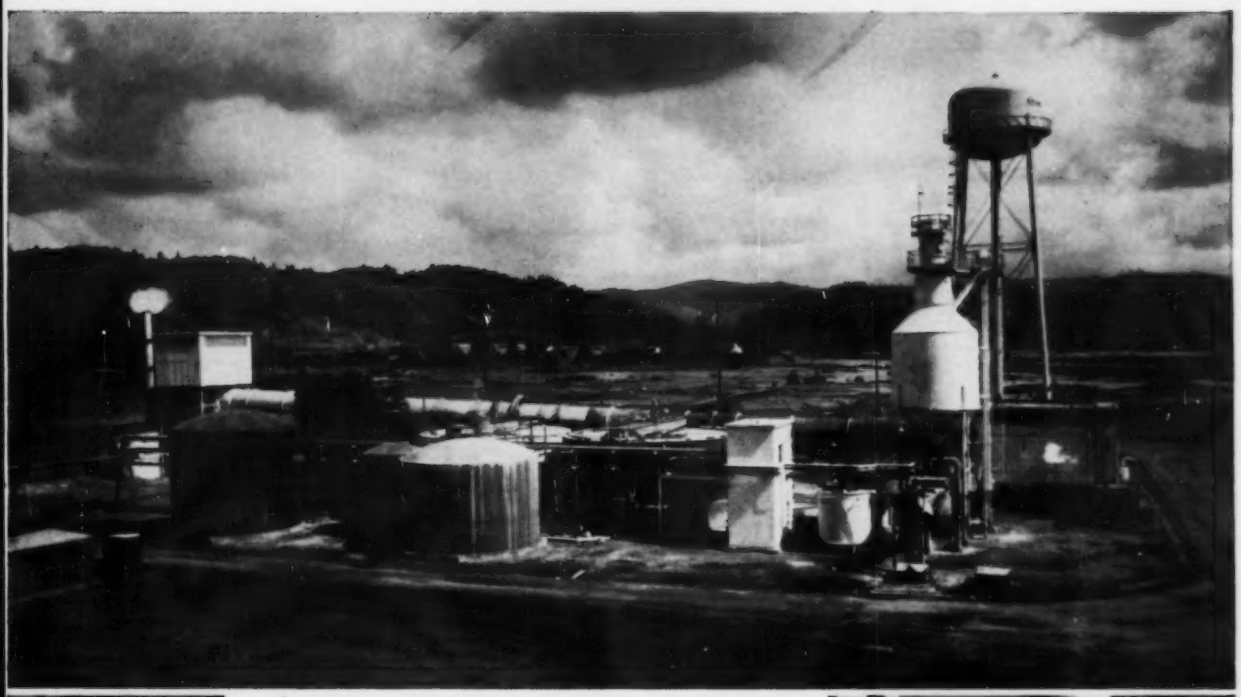
Thorough planning and the choice of proved, modern equipment has resulted in a highly efficient operation with high production standards. Contributing to the success of the new mill is the Dorr-Oliver equipment shown here . . . the result of 35 years of experience in serving the pulp and paper industry.

For information on the full line of Dorr-Oliver equipment and help in its application to your production problem, write to Dorr-Oliver Incorporated, Stamford, Conn.

Consulting Engineers: Sandwell & Company



▲ **OLIVER® BROWNSTOCK WASHING SYSTEM** A 4-stage 11'6" diam. x 14' face 55F9 Oliver Brownstock Washing System is used by Georgia-Pacific to insure thorough removal of dissolved solids and efficient black liquor recovery. Total washing losses as salt cake average ten to twelve pounds per ton when running 400 tons per day.

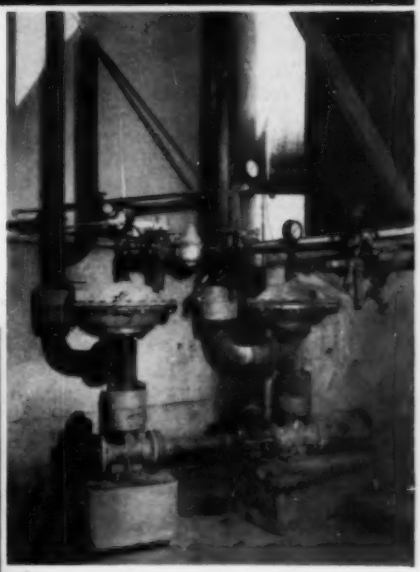


DORR® RECAUSTICIZING SYSTEM

Designed by Dorr-Oliver, this complete system delivers a clear white liquor of uniform causticity to the digester—holds soda losses to a minimum. The Dorr Recausticizing System is now recognized as the standard chemical recovery process for alkaline pulping.

ROTARY DRUM SAVEALL

Large filter area and high capacity for maximum fiber recovery, with fully automatic operation, are provided in this 8' x 16' Type 15F11 Saveall, with rubber covered cylinder.



OLIVER ODS® DIAPHRAGM PUMPS

Handling underflow from the Dorr Thickener, these diaphragm type pumps transfer flows containing a high percentage of solids. Link-free, pneumatic operation means low maintenance costs.

DORR-OLIVER
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WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

Coating Conference

(Continued from page 32)

pendent carton plants who are substantial users of coated board are continuously diminishing. This reduces the market for board as such and increases the competition for the remaining customers. This tends toward increased improvements in quality.

Coating developments are in a very active state. There are a number of trends which are evident and a number of areas in which work is very active. The bleached board industry has grown very rapidly in the last decade and has made great strides in quality improvement. It has not only taken most of the uses for wet food packaging, where it originally got its start, but it has moved into areas formerly serviced by filled boxboard and unbleached liner board. In order to do this, many of the producers of this board have found it necessary to go to a mixed furnish and to take more care in the formation of their sheet. Many producers of the bleached sheet have found that coating a poor base sheet results in a poor coated sheet. In many mills the fiber economy is such that a mixed furnish is difficult to use. Considerable work is, therefore, being done on coating formulation and coating methods. There are still big questions to be answered as to which side of the sheet should be coated and which coating method should be used. Considerable work is being done on a combination of air knife and trailing blade coaters. Somehow the Champion coater seems to have been overlooked by the bleached board producers but it too, must be considered.

The increased capacity of bleached board has created an excess capacity of all types of board and this, in turn, has affected the markets for filled boxboard. The producer of filled boxboard generally has a cheaper source of raw materials than the producer of bleached board, but he must do a more extensive cleaning job to make it suitable for many end uses. In an effort to produce a better sheet at a lower price, very substantial amounts of work are being done to improve the cylinder machine, as well as stock preparation processes. A great amount of work is being done on forming units to make the filled sheet. Out of this should come methods for making a clean, uniform sheet from waste paper at a very substantial reduction in cost. Until quite recently, coating was used on filled boxboard only to improve print quality. Coating was applied to a sheet already lined with white fibers. In effect, the gray sheet was first veneered with white fiber and then painted with white paint. In recent years, there has been a concept in the filled boxboard industry that the veneer of white fibers, which is an expensive part of the sheet, should be eliminated and the gray sheet should be merely painted. The coating process used today which will do this is the air-knife, and there should be a great increase in the number of air-knife installations in the filled boxboard industry. The air-knife is of value because it gives a uniform coating thickness which results in good hiding power. Experimental work on other methods which will give a uniform coating weight will be accelerated. Such methods as spray coating and extrusion coating, which have been largely abandoned in the past, will be looked at again. A machine which extrudes a curtain of coating and which has been used in the lumber industry has been recently adapted to the coating of corrugated board.

The immediate major changes in coated filled boxboard will be a shift to air knife or other methods which allow the use of a lower brightness base stock. This shift will be made first in the higher brightness grades. Lower brightness coated grades and uncoated grades will shift to air knife coated sheets if this becomes more economically attractive.

Increasing amounts of unbleached kraft and jute boards will be coated to upgrade the appearance of corrugated containers. Beyond a certain point, print quality will be limited by the nature of the base sheet. This will be improved in certain cases by the use of secondary headboxes, but work must be done beyond this to get coating methods that will give good printing quality on this base sheet. Otherwise, high quality printing on corrugated boxes will require the use of bleached board.

Air Doctors vs. Blade Coaters

This paper, authored by G. L. Booth and N. H. Laughrey, Black-Clawson Co., Fulton, N. Y., reviews the functions, applications and relative advantages and disadvantages of air-doctors in coating as compared with the blade coaters.

Fundamentally, air-doctors are outwardly the same in that an excess of coating is applied to the sheet by a slowly rotating roll whereupon the sheet is directly exposed to a controlled blast of air which removes the excess and leaves the desired amount of coating on the sheet normally pattern free. The most common and well known air-doctors used today are the Terry air-doctor, the Pomper air-doctor, the Egan, Marsh and Jagenburg air-doctors, the Ozalid air-doctor and the Trumpp and Birch air-doctors.

Mr. Booth then briefly described the construction of each air-doctor as outlined by the following highlights: With the Terry air-doctor the top blade is flat to make manufacturing and control of blade setting easier. Adjustments of blade opening are controlled by a push-pull device spaced every four inches across the base of the blade. The cross section is cast in general teardrop shape which is designed again for efficient air handling. The Pomper air-doctor's cross section is essentially the same as the Terry air-doctor, but a tube is used rather than a cast body and the impingement of air with this doctor is more nearly tangent.

The Egan, Marsh and Jagenburg fall into the same category and are quite similar to the two doctors mentioned above. Blade adjustment with the Ozalid air-doctor is from the rear. This unit is used primarily for a brush type of coating operation. The Trumpp and Birch air-doctors more nearly approach the brush type.

The difference between an air-doctor and an air-brush is defined as follows: "An air-doctor is a unit which impinges a knife-like stream of air both to meter and physically remove the excess coating from the sheet while leaving the remaining coating smooth on the sheet as it passes through the knife zone. An air-brush smoothes the coating on the sheet but it does not physically remove excess coating as the coating usually cascades down the web. Normally an air-doctor will operate at speeds from 500 to 1200 feet per minute, applying coatings of 35 per cent to 45 per cent of solids, in coat weight ranges of 6 to 18 pounds per

STOPS WET-END BREAKS

Curtiss-Wright **PERMAWEB***

the complete-automatic Fourdrinier system
that detects and halts wet-end breaks
-then restores the paper web to
its full width-all within
8 to 15 seconds

UPS PAPER OUTPUT

There was a time when wet-end breaks would play havoc with paper-making production—upset the entire processing cycle—pyramid production costs. No more. Now there's PermaWeb.

Have you seen PermaWeb in action? A special film, made at the first PermaWeb installation, is now ready for viewing. Call, wire or write George Butler, Manager, Industrial Controls Department, Electronics Division, Curtiss-Wright Corporation, 637 Central Avenue, Carlstadt, New Jersey and he will arrange a private showing at your mill.

The paper industry's leader in basis weight and moisture control systems

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*Patent applied for.

book ream. Normally expected coating uniformity is plus or minus 5 per cent and some operations are controlled as closely as plus or minus 2 per cent. Normal coating viscosity ranges from 50 to 400 centipoises. Coating weight is controlled by air pressure in the air-doctor. In some cases speed of the color roll has a secondary effect on coat weight. Machine speed will influence coat weight when all other conditions remain constant. Ordinarily, once the orifice opening is established and the position of the air-doctor is established in relation to the breast roll, the unit will not be altered for various coatings. Air-doctor position has to be changed quite frequently which indicates that the air-doctor may be somewhat susceptible to small changes in the rheological properties of the coating.

"Blade coating is the application of coating by the use of a flexible blade. The fluid mechanics actually taking place in the blade area are still not fully understood. The hydraulic force of the coating does tend to flex the blade, letting a certain amount of coating through." This type of coater is well adapted to high solids coatings, although its range is from 45 per cent to 70 per cent. Dispersions appear to be unlimited in the adhesives used. Blade coating can include such solutions as lacquers and varnishes.

What is now commonly referred to as the trailing blade coater was first known as the Trist (Rice-Barton) coater. In this coater the color trough is in a position horizontal to the backing roll and it is loaded with coating from a manifold above. The blade is locked in a holder made especially for this coater and it is backed up by a heavier blade for support. Solids, viscosity, physical characteristics of the sheet and machine speed are factors which control coat weight in most blade coaters. Coat weights are in a low range, usually between 1½ pounds to 4 pounds per ream. Higher coat weights have, however, been achieved.

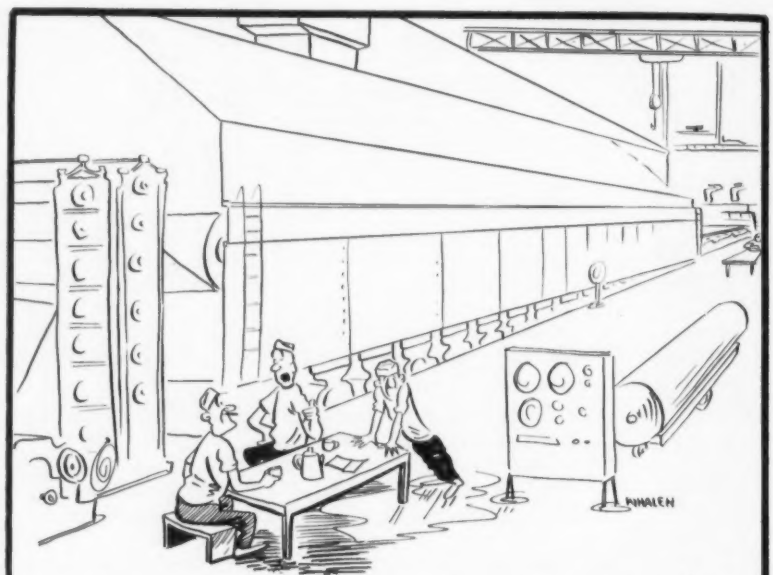
Another blade coater is covered by the Rush patent. In this coater the coating is picked up by kiss application and the excess is doctored off. Here, too, the principle of "the greater the viscosity, the greater the hydraulic force to flex the blade open," applies. Little is, however, actually known so far about this type of blade coater. A third method is known as the Kohler blade coater which is described in another section of this Coating Conference report. Another blade coater is the Black - Clawson "Flexiblade" coater, a comparatively new machine. Here the coating head which includes the coating chamber and the blade holder, lifts vertically to the backing rubber covered roll. The principle of coating remains the same as in the other units but this type of coating equipment is capable of compensating for the hydraulic of the coating action. A pneumatic tube in the blade holder controls the amount of coating passing the blade. This coater has experimentally deposited from 1½ to 21 pounds per ream on various grades of paper and board. Blade thickness in this design is dictated by viscosity and solids of coating color.

An important general consideration of blade coaters is the fact that heat sizing and web density play an important part. A slack sized news sheet, for example, will pick up more coating than a hard sized dense top liner on board. A study of these variables was recommended as the project for a research institution.

The following comments were made about sheet surface as a variable with blade coating: The rougher the top surface of the web the more clay will be packed into the valleys, leaving the hills with little or no coverage. A rough surface sheet will end up with a more even surface with blade coaters but mottle may be evident with or without calendering. Streaks are common to all blade type coaters and they are usually attributed to foreign material lodging itself behind the blade.

It is impractical to use air-doctors at low coating solids on a paper machine running at high speed because of the drying problem. An air-doctor used at speeds in excess of 1200 f.p.m. is not known. On the other hand, an air-doctor is a method that will apply coating weights in excess of 15 pounds per 3300 square feet. The air-doctor is preferred on cylinder machine board making a lined sheet with a rough surface. The negative features of the blade coater are its inability to coat satisfactorily a reasonably rough surface such as lined cylinder board. In most instances the blade coater is prone to streak problems. The air-doctor will, however, also streak with a dirty nicked blade (but not because of sheet surface roughness.) The air-doctor coater will apply a reasonably uniform coating to follow sheet contour. A blade coated sheet is superior for rotogravure printing and the air-doctor coater finds a good application in the coating of papers for lithography. The air-doctor is relatively streak free; it means low maintenance, it applies heavy coat weights and it applies an even thickness which is good for functional coatings.

The air-doctor requires low viscosity and thus usually low solid coatings. The blade will handle high viscosity color and consequently high solids; it is excellent for high speeds, it produces a level surface ideally suited to printing and because the surface is flatter it requires less calendering.



"A RUNNER JUST CAME IN FROM THE WET END!"

with three or more preset numbers

PJT NEWS OF MERCHANTS

Toledo Merchandise Co. Names Two To Sales Staff

Appointment of William N. Arend and Elmer E. Ellsworth to the sales staff of the Toledo Merchandise Co. has been announced by E. E. Taylor, president.

Mr. Arend was formerly with De-Veaux TV and Appliance, and Mr. Ellsworth was formerly a buyer for the Commodore Perry Hotel.

Lieberman Purchases Allan & Gray

Allan & Gray, a 50-year old paper distributing firm, at 114 West 17th Street, New York City, has been sold to Elwyn Lieberman, former vice president of Linde Lathrop Paper Co., also of New York. Announcement of the sale was made by William T. Black, until the sale, proprietor of the Allan & Gray concern. Business, the announcement indicates, will continue uninterruptedly at the 17th Street address.

Landgraff Joins Arthur Schroeder

Edward F. Landgraff has joined the Arthur Schroeder Paper Co., Inc., New York City. Mr. Landgraff was connected for 14 years with Pagel, Horton & Co., Inc., as manager of its paper department. He attended Columbia College for pre-engineering and was in the U. S. Naval Reserve for the period 1942-1945.

Paper Firm Begins Work On Warehouse-Office

Blake, Moffitt, and Towne, paper distributing firm, has started work on a new warehouse and office building at 202 S. 27th St., Phoenix, Ariz.

Arthur W. Towne, San Francisco, president, said the new structure will be completed by late fall. Plans were prepared in the company's engineering department. The work will be done by area subcontractors.

The building will have more than 50,000 square feet of space and will stand on a tract of 3½ acres of land. Plans are arranged so that the building may be enlarged if required.

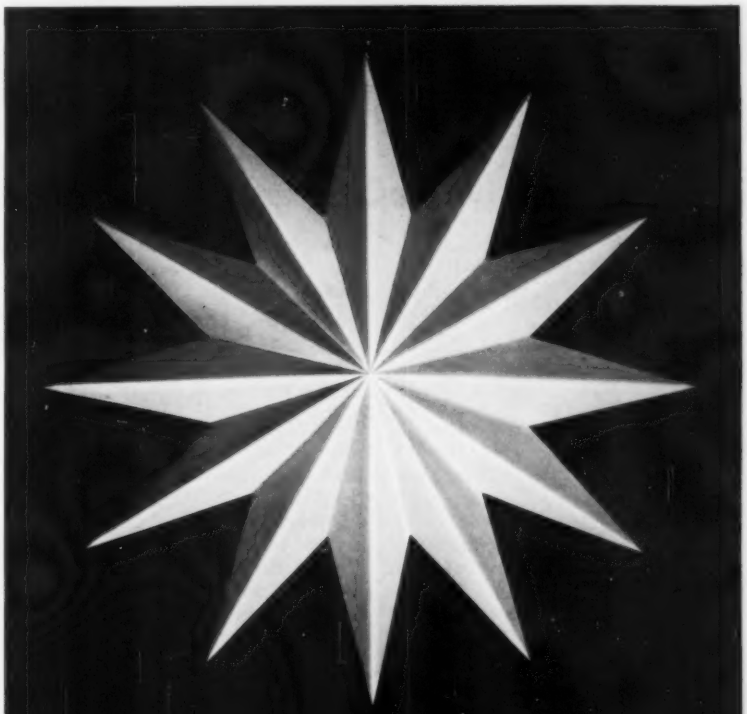
A front wing will contain air conditioned office space. Behind this the main building will serve as a warehouse equipment with seven loading and two receiving docks for trucks, and a railroad spur that can spot three cars at a time beside the building. The new quarters will be more than double the present space.

Established in 1855, Blake, Moffitt, and Towne has had a distribution warehouse in Phoenix since 1918. The firm has 18 divisions with 16 district warehouses in six Western states. Stanley H. Blyth is Phoenix division manager.

Hubbes & Howe Ups Homer

Warren B. Homer has been appointed assistant manager of the Fine Paper Division of Hubbs & Howe Co., Buffalo, N. Y., paper wholesalers. Mr. Homer has had 30 years of experience in fine paper business and has been with Hubbs & Howe since 1946.

The company also announced that Frank W. Bryans Jr., who has headed the order department for many years, has resigned to become assistant manager of the Tampa Paper Co. in Tampa, Fla.



Whites can be uniform and bright!

with Sandoz Leucophor BS Liquid

Freedom from graniting . . . even-ness of strike . . . level, bright tone . . . call it what you will . . . these terms tell the technical story of Leucophor BS Liquid. From the time this Sandoz product first came on the market, tests and paper mill men's testimony have proved conclusively: Leucophor BS Liquid gives bleached papers and boards a brightness that is startling as well as economical.

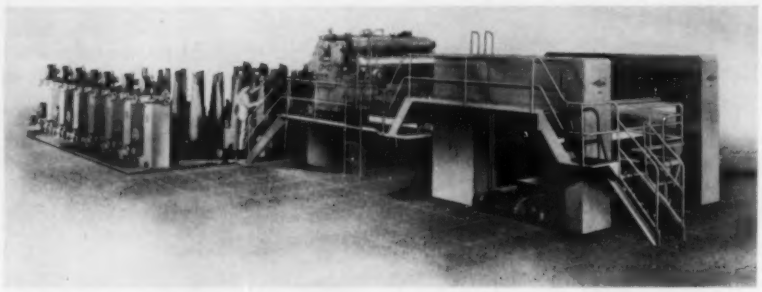
Examine your own fluorescent white papers under an ultra-violet light. If they show graniting, now is the time to put in a call for Sandoz. And for a quick report on the why and how of fluorescent brightness measurements, phone or write:—SANDOZ, INC., 61-63 Van Dam Street, New York 13, New York—ALgonquin 5-1700.

District Offices: Charlotte, Cincinnati, Fair Lawn, N. J., Hudson, Mass., Los Angeles, Philadelphia.

SANDOZ

THINKS AHEAD WITH PAPER SANDOZ

PJT NEW EQUIPMENT & SUPPLIES



Sheet Cutter-Layboy Operated by One Man

A precision sheet cutter-layboy engineered by Lamb-Grays Harbor Co., Inc., Hoquiam, Wash., features one-man operation with all controls for both cutter and layboy centralized at the layboy.

This machine is designed for utmost cutting accuracy at speeds up to 1000 feet per minute, cutting up to 600 lb. total basis weight to a sheet-length accuracy of 1/64 inch. As a result, many trimming operations are eliminated.

Designed for minimum downtime to provide maximum operating time on each shift, the machine features a multiple-roll backstand carriage which can be shuttled from side to side. While one-half of the backstands are being loaded with new paper rolls on one side, the rolls on the other side are unwinding through the cutter. This reduces time change-over to a few minutes.

Another minimum downtime feature is the automatic layboy discharge, which discharges a 72-inch high stack (including skid) automatically upon a receiving conveyor for lift-truck pick-up. This feature avoids having to wait for pick-up when a lift-truck is not immediately available. Form No. 5905 more fully describes the Lamb cutter-layboy.

Preset Controllers are Transistorized

A transistorized Preset Controller series has been developed by the Dynapar Corp., Skokie, Ill., designed specifically for heavy duty industrial production applications, such as counting, measuring and control for automatic cutting-to-length, batch-counting and sequencing, automatic machine tool positioning, and many other measuring and control functions.

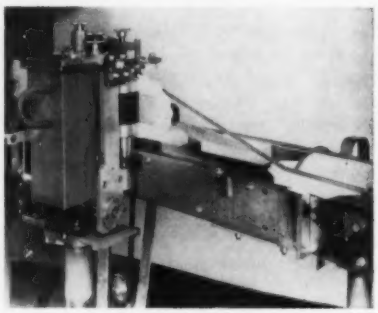
The units feature totally enclosed steel cabinets with slide-out chassis for "plug-in" servicing. They are said to operate directly from all types of sensing devices, and have provision for a wide range of optional outputs. Preset range: zero to 180,000 counts per minute, with instantaneous reset (optional: to 75,000 counts per second). Numerical readout consists of either glow counter tubes or Nixie in-line indicators. The manufacturer reports transistorized circuitry provides billions of operations without wear because there are no mechanical parts of hot cathode tubes.

Two to six digit Preset Controllers (single or dual) are available with three or more preset numbers on any model. Splash-proof design is standard modification. Cabinet size: 7 in. h. x 13 in. w. x 14-in. d., and weighs 25 lbs. Rack panel model weighs only 12 lbs.

Direct Imprinting on Waxed Cartons

Direct printing on frozen food cartons as they are formed is possible with the Crown Regal printer, offered by Western-Waxide Division, Crown Zellerbach Corp. Imprinting without smearing is done as cartons are set up so there's no loss in production time.

The Crown Regal printer, manufactured by Adolph Gottscho, Inc., is especially designed for use on waxed cartons where the wax application is controlled by spot waxing. Direct carton printing means that matter can be printed on the carton where they won't be lost or destroyed when the overwrap is removed. Also, other



matter can be printed without altering the present overwrap design. Change of copy from one rubber plate of line drawing and type to another reportedly can be done in minutes.

The Crown Regal printer is mounted on the conveyor, adjacent to the former. Only four hours are said to be required for installation and the printer does not take up floor space. Write to Western-Waxide Division, Crown Zellerbach Corp., 2101 Williams Street, San Leandro, Cal., for further information.

Sixty Per Cent $Mg(OH)_2$ Now Available

Magnesium hydroxide, the industrial form of milk of magnesia, is now available in a 60 per cent concentration as a result of process improvements by The Dow Chemical Co.

This is the first time a concentration this high which contains a

pumpable consistency has been produced commercially. Formerly, 52 per cent was the highest available concentration of magnesium hydroxide.

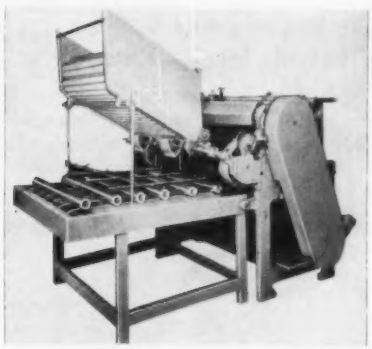
A chemical intermediate, magnesium hydroxide finds its primary application as a raw material for magnesium base pulping, including the magnefite process.

Dow's improvements in the processing of magnesium hydroxide center around better stabilization to minimize the settling of solids. The result is a fluid, stable suspension which lends itself to tank car shipment from Dow's Ludington (Michigan) Division, where it is produced.

Rewinding Machine Increased in Speed

A number of improvements and refinements in the Shultz Type XP Rewinding Machine has increased both production speeds and versatility of the machine. The XP will now produce up to 40 completely finished rolls of gift-wrap paper per minute. Rolls of shelf, coated, waxed, and other papers, as well as foils and cellophanes can be produced on this same machine.

This represents an increased pro-

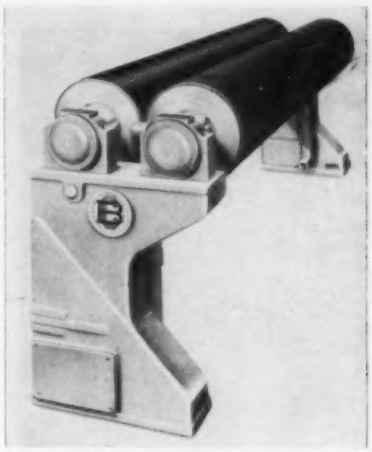


duction rate of approximately 60 per cent, according to the manufacturer, Schultz Engineering, Corp., 190 Banker Street, Brooklyn, N. Y.

Improved roll starting mechanism, redesigned elevator arrangement and gear train, including change gear arrangement, are among the changes. There has also been an increase in the range of core sizes by more than 25 per cent. Provision has been made for fastening the tail end of each by either glueing or tape adhesion. According to Schultz engineers, no adhesive is required in starting rolls. Starts are made smoothly without folds or wrinkling, and accuracy of cut-off lengths is maintained to a very small tolerance. A brochure is available.

Horizontal Size Press Has Balanced Roll Loading

The Black-Clawson Co. has introduced an improved horizontal size press which features standardized basic unit design, and balanced pneu-



matic loading of rolls. Designed and built by the Paper Machine Division at Watertown, N. Y., the press is available in roll sizes ranging from 16-inch diameter up to 36-inch diameter matched rolls.

Rolls are carried in heavy duty anti-friction bearings. The pivot roll arms are equipped with short-stroke pneumatic cylinders on large units and frictionless diaphragm units on smaller presses. When air pressure is released rolls separate automatically. Air cylinders are enclosed in end frames and are readily accessible through large openings under cover plates.

The horizontal size press is a standardized basic unit to which accessory equipment can be added, as required. Such accessory parts can be furnished with the basic unit, or can be fitted in the field to premachined mounting pads which are provided. These claims include: lead-on and lead-off rolls, shower pipes, hydraulic loading, carriage units which permit removal of entire unit to machine aisle for clean-up and maintenance, a selection of roll coverings and automatic features to meet individual mill requirements.

Homopolymer Emulsion Costs High Gloss Film

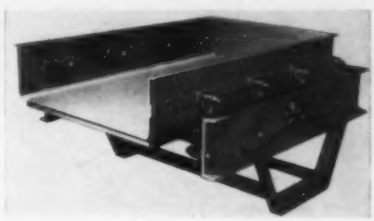
A fine particle polyvinyl acetate homopolymer emulsion is available from Shawinigan Resins Corp., Springfield 1, Mass.

Designated Gelva TS-85, the emulsion has an average particle size of 0.2-0.3 microns and an emulsion viscosity of 1400-1700 cps. at 55 per cent solids. The emulsion is said to have high mechanical stability, good blocking resistance and freeze-thaw stability and is highly stable on dilution. Tolerance to most plasticizers, borax, inorganic salts, and most organic solvents (except ethyl alcohol) is excellent, the company states. It is also reported that films cast from this emulsion have high gloss and clarity and possess good resistance to water, grease and oils. Films are flexible at room temperature without the addition of plasticizer.

Simplified Vibro-Feeders Handle Bulk Materials

A line of vibrating feeders made in basic standards ranging from 3-foot to 10-foot lengths and widths from 6-inches to 36-inches is offered by the Lo-Veyor Division of the Ajax Flexible Coupling Co.

Their mechanical simplicity, completely enclosed drive unit, and elimination of lubrication problems through the use of specially designed rubber-bushed, spring-loaded supporting arms makes them suitable for installation in inaccessible loca-



tions, report the manufacturers.

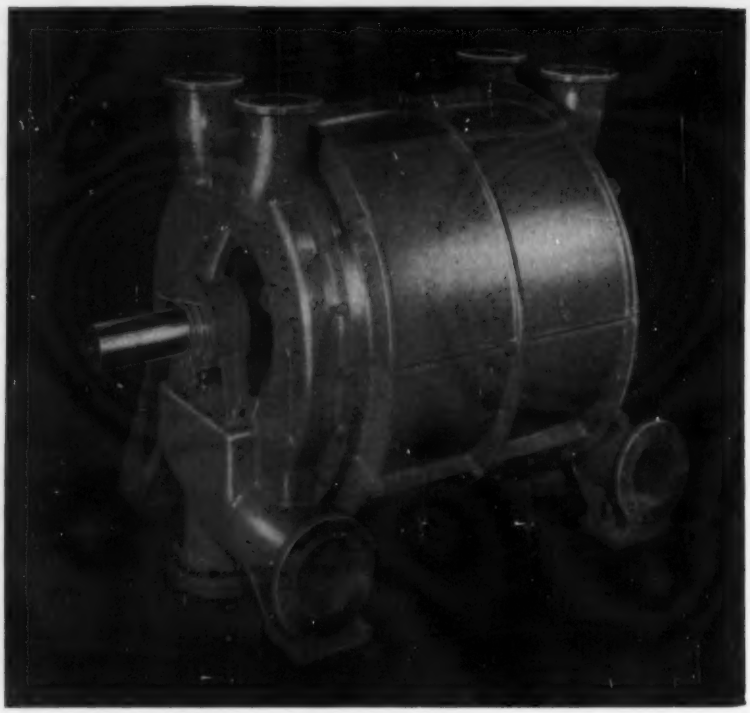
Four standard choices of drive position are available—also with special arrangements for meeting unusual conditions. Complete information is available in Ajax Selection Guide No. 66, by writing Ajax Flexible Coupling Co., Inc., Westfield, N.Y.

Centrifugal Screens are Smaller Sized

The Bird Centriscreen, a total enclosed paper machine screen for delivery of stock to the head box at the desired pressure, has announced a smaller version of the Model 14.

The Model 14 Centriscreen handles up to 5600 g.p.m. or more. The Model 10 Centriscreen handles approximately half the capacity of the Model 14, the volume depending on the character and consistency of the stock. The Model 10 is suited for

This New Nash Vacuum Pump Offers Four Separate Suctions and Vacuums Simultaneously



The Nash 5308-A has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

Picture below shows simple drive possible and flexibility of piping permitting capacities to exactly fit requirements of different sections of the paper machine.

NASH
ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT

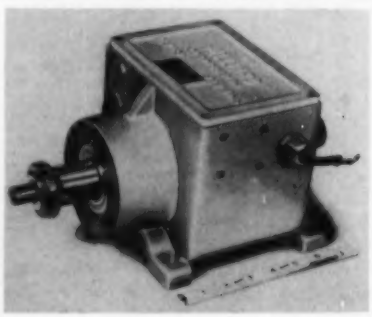
application ahead of smaller fourdrinier machines and on cylinder machines requiring a screen for each mold.

Extensive field tests have indicated that the Model 10 Centriscreen offers the same efficiency in removal of shives and specks that so many mills have experienced with the Model 14. Identical in design and construction, the Model 10 Centriscreen is said to operate smoothly and continuously without screen plate breakage or erosion.

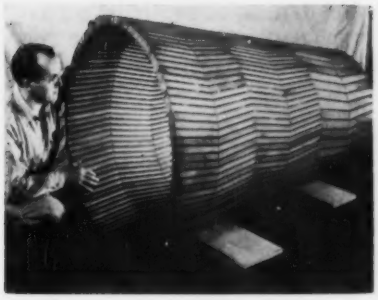
Complete information may be obtained from the Bird Machine Co.'s. South Walpole, Mass.

Packaged Drive Unit Controls Intermittency

All of the Intermittent Drive Unit's parts are totally enclosed in an oil bath housing making it applicable in dusty, "steamed" or "wash-down" conditions. The single package unit



gives control of any intermittent motions desired, clip and bend, shear or slash, oscillate or repeat, raise or lower, index and position. The I.D.U. can be installed easily and needs only electrical connection. Hand-or foot-operated equipment can be mechanized, existing power operated machines can be automated and it can be used as a "building block" in designing new machinery or production drives. The unit features highly flexible control, manual, mechanical or



ONE-PIECE JORDAN SHELL FILLINGS, factory assembled, are claimed to reduce maintenance costs and installation times to 15 minutes. "Boltobar" fillings are made to close tolerances in sizes to fit standard Jordans of any make or size. Its knives are made by the exclusive Microlyzing process; specially treated wood filler bars maintain their shape during operation. John W. Bolton & Sons, Lawrence, Mass.

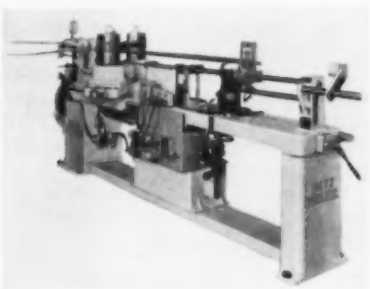
electrical, permitting "demand" type operations in fixed or variable cycles.

For complete information, write "I.D.U.," The Hillard Corp., West Fourth Street, Elmira, N. Y.

Tube Winder Has Integral Cut-Off

A fully automatic spiral tube winding machine with a hydraulically-operated integral cut-off has been announced by Dietz Machine Works.

Designed to wind and cut roll



cores, can bodies, protective sleeves, etc. in a single smooth operation, the Model "ATM" winder is reported to produce tubes up to 20 feet long at speeds up to 120 f.p.m. It is said to be an exceptionally sturdy machine with a number of design features that assure accurate, clean, square cuts. For most purposes, according to Dietz, finished tubes can be produced on the machine, thus eliminating the need for recutting.

Bulletin No. 101, describing this machine as well as another model

NEW FAIRBANKS-MORSE Portable Platform Scale

MODERN FUNCTIONAL STYLING

- **reads quickly and clearly under all lighting conditions!**
- **moves easily through narrower aisles!**
- **stays accurate and sensitive under roughest conditions!**

Designed for your most exacting requirements—built for years of heavy-duty use—this new Fairbanks-Morse Model 1124A Portable Platform Scale helps speed your operations through faster, more accurate weighing!

Note the big, clear beam design that promotes quicker reading—the new square weights for easier handling! Check the new concealed wheels, the compact overall width—important for fast handling in congested areas. Notice the absence of check rods, to eliminate binding. From top to bottom this is a handsome, durable scale designed to use—built to last—a worthy successor to the hundreds of thousands of famous Model 1124 Scales proven throughout industry! Capacity 1000 lbs. Write Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago 5, Illinois, for new Model 1124A Catalog.

See Sweet's Plant Engineering File for full line of F-M Scales.

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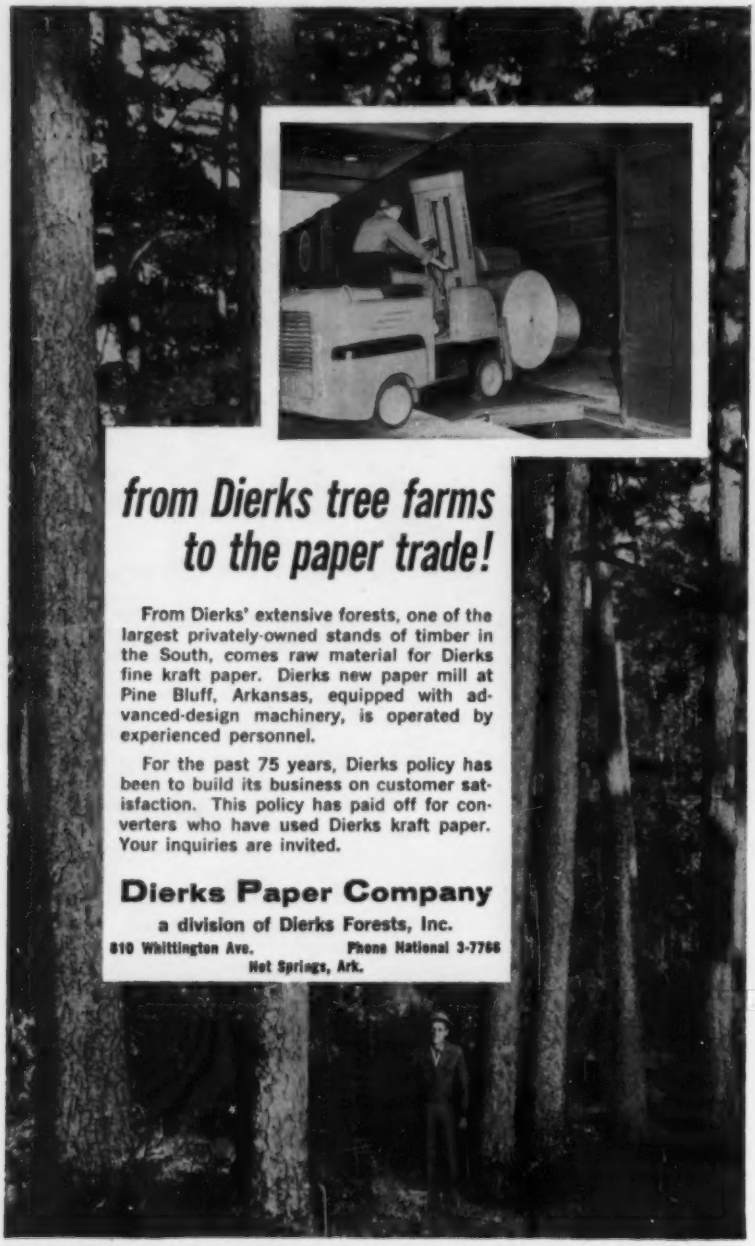
GENERATORS • COMPRESSORS • MAGNETOS • HOME WATER SYSTEMS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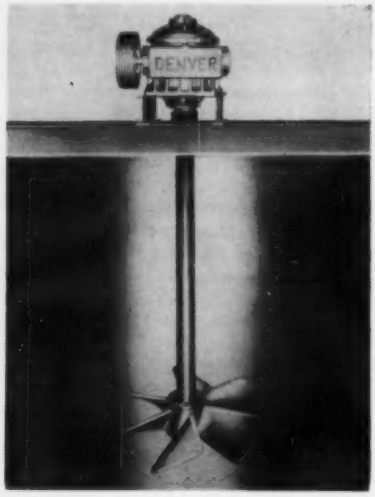
REPORTS APPRAISALS ESTIMATES AND SURVEYS

with mechanically-operated integral cut-off, may be obtained upon request from Dietz Machine Works, 120 W. Fontaine St., Philadelphia 22, Pa.

Propeller Agitator Has Worm Gear Drive

An agitator with worm-gear drive powers propellers up to 120-inch diameter for tanks up to 50 feet in diameter by 40 feet deep. This drive



was developed by the Denver Equipment Co. to provide an agitation mechanism powerful enough to withstand heavy cantilever loading imposed by large diameter turbine propellers and long shafts. Special bearings carry all radial and thrust loads. Mechanical efficiency of up to 90 per cent is claimed.

The development of this drive makes possible positive propeller agitation, suspension, mixing or conditioning in large tanks, such as slurry holding and mine backfilling. Propellers may be of standard or rubber-covered construction.

For further information write to: Denver Equipment Co., P. O. Box 5268, Denver 17, Colo.

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BRONZE COCKS
GAS • LIQUID • AIR • STEAM

Fig. 479 Fig. 278 Fig. 177

Stop leakage! Cut repairs and replacement costs! Bodies of Lunkenheimer T-1 Bronze (A.S.T.M. B62) with keys and plugs of high-strength H-1 Bronze, stamp these as the cocks you can install and forget.

2-3-4-Way • Gasoline Drain • Bibb Nose • Straightway
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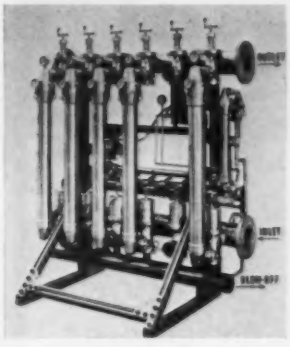

Ronningen Model 306 showing one unit removed for inspection. Main unit remains in operation for continuous service. (Patented).

1. Differential pressure automatically operates filter mechanism.
2. All bronze construction, including headers.
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4. In case of electrical failure, may be operated manually.
5. 200 to 1000 GPM; pressures to 200 PSI; 20 to 700 mesh.
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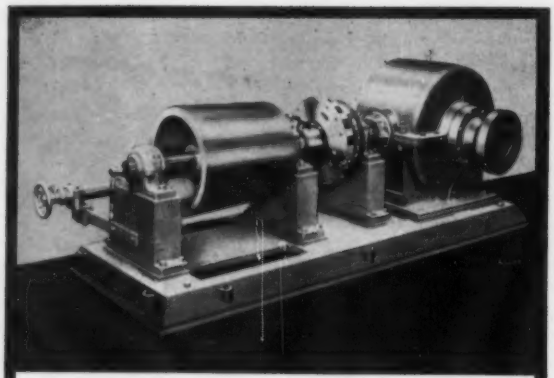

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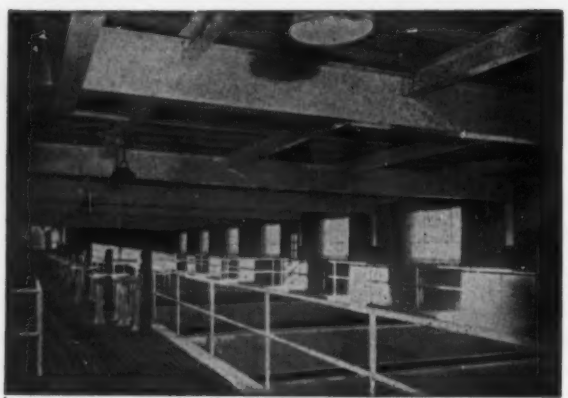
Designers and manufacturers of equipment for Bag Making, Printing, Coating, Laminating, Gluing and Labeling



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An established paper company in the East with expanding manufacturing facilities presents an excellent job opportunity for a chemical, mechanical or electrical engineer interested in developing in the field of process control.

Position demands personable, tactful, individual with willingness to progress. Assignments relate to test, raw material evaluation, process and product improvement. Kindly submit resume and salary requirements. Address Box 59-167 care Paper Trade Journal. J-15

Experienced Coating and Color Man—Technical background for a bleached kraft food board mill. Excellent opportunities, salary and benefits. Please send resume including education, experience and salary requirements. Write Personnel Manager, American Box Board Co., Filer City, Mich. J-8

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Familiar with paper machine designs and costs. Apply with full details including experience and salary requirements. Our employees are aware of this ad.

WRITE BOX 59-178 care Paper Trade Journal. J-22

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Graduate Chemical Engineer for new engineering and development work. Job will require some travel to operating units in North America. Will be located in Southeastern U. S. A.

Applicant must have experience in sulphite pulp process. Experience in recovery of by-products in sulphate and sulphite processes desirable. Age up to 40 years. Good salary and advancement opportunities. Organization has no chemical engineers and is now entering chemical manufacturing field. Our employees know of this ad. All replies treated in confidence. Submit detailed resume to: Box 59-156, care Paper Trade Journal. TF

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Applicants must have experience with high pressure turbo-generators and boilers. Hydro-electric experience desirable as well as test course experience with manufacturer of electrical or steam equipment. Age up to 40 years. Good salary and promotional opportunities. Our employees know of this ad. All replies treated in confidence. Submit detailed resume to: Box 59-157, care Paper Trade Journal. TF

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1—82" 10-10
1—72" 10-11
1—72" Type 10, Anti Friction bearings. Speed 2000 F.P.M.
1—72" 10-10A
1—72" 26-3A Cameron
1—72" 10-04 Shear Cut
1—62" Late Type 10 Model .04-1 BPMR (40" diameter Rewind)
1—62" 9-5
1—62" 10-5
1—62" 26-2A with 100 score cutting units
1—62" 40-1-AF
1—52", & 1—42" Model 24-7
1—42", 50" & 62" Type 6

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1—Lawton Mod. "A" Jr. Toilet Roll Wrapper
4—62" 25W H-S Roll Winders
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1—46" Reverse Roll Coater
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1—Beasley French Bag Machine. Range: (2" x 2¾" to 6" x 13⅜")
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1—48" Unicraft Embosser
2—Hudson Sharp Napkin Machines, with embossing attachments; 1 — 3 Deck (No Printer), 1—2 Deck with 2-color printer.
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M-25

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The Equipment Engineering Section of the West Virginia Pulp and Paper Company has immediate openings for

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50 HP RELIANCE VS DRIVE

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1—3 roll 84" calender stack.
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1—10' high x 5' dia. High pressure vertical digester.

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1—400 h.p.—Westinghouse Drive

DRYERS
6—24" diameter x 80" face, Lukens High Pressure Dryers, anti friction bearings.
1—28" diameter x 84" face
2—30" diameter x 40" face with bearings
2—30" diameter x 48" face with bearings.
4—48" dia. x 52" face with frames, gears, bearings
1—36" diameter x 44" face
3—36" diameter x 76" face.
5—36" diameter x 84" face and gears
1—16" diameter x 54" face (steel)
1—48" diameter x 118" face
6—48" diameter x 130" face.
1—48" diameter x 92" face.
2—Calender Dryers, bronze, 36" x 128", with frames, gears & necessary rolls to make up the unit.

EMBOSSING CALENDERS
1—3 roll 57" Embossing Calender
1—3 roll 51½" Smoothing Calender
—2 roll 90" Smoothing Calender
1—43" 3 Roll Embossing Calender.
1—62" 2 roll Embosser.

EXTRACTOR ROLL
1—Extractor roll, 26" diameter x 104" face

FILTER
1—Dorr-Oliver Filter, 3 ft. dia. x 6 ft. face, stainless steel construction, with pump.

FLAT SCREENS
1—8 Plate "Packer"
1—12 Plate "Packer"

FRAMES
Beloit Heavy Duty Dryer Frames for 100 Dryers (42" Dia.) 4 Stack. Immediate Delivery.

HOGS
2—Mitts Merrill Type 15 C.F.

JORDANS
1—Jones Midget Jordan, s.s. fillings, with 40 h.p. motor and spare new fillings
1—N & W Unifiner, Mammoth Junior No. 3
1—Noble & Wood Mammoth
1—Noble & Wood Monarch, Type D

LABORATORY EQUIPMENT
1—20" Fourdrinier Wet End & Press Section
1—Emerson Jr. #1 Jordan, like new condition, with motor.
1—Bauer-McNett Fibre Classifier
1—Press Roll 6" diameter 24" Face, steam jacketted
1—2' Shartle Hydrapulper
2—8" x 8" Valley Sheet dryers
1—12" x 12" Valley Sheet dryer
1—6" diameter Hydraulic Press
1—Experimental Digester (High Pressure)
1—5 lb. Valley Beater.
1—15 lb. E. D. Jones Beater
1—8" x 8" Valley Hydraulic Press
1—Clark Softness & Stiffness Tester
1—Williams Freeness Tester, with Timer
1—10" Butterworth Padder.
1—Thwing Albert Tensile tester
1—Gurley Densometer Model 4110
1—20" Sprout Waldron Double Disc Refiner, A-F Bearing with motor.

LAMINATING MACHINES
1—52" face Waldron Laminating Head
2—84" Asphalt laminators

MISCELLANEOUS
1 #1 Miami Selectrap

MOTORS
1—60 h.p. upright induction motor.
1—30 h.p. upright induction motor
1—200 HP General Electric Synchronous Motor and Starting Equipment (3/60/440, 360 RPM).
5—25 h.p. Westinghouse, totally enclosed, ball bearings, 705 r.p.m.
1—40 h.p. Westinghouse, totally enclosed, ball bearings, 880 r.p.m.

PRESS ROLLS
2—Chilled iron, chrome plated 9" x 72"
1—Chilled iron, chrome plated 12" x 100"
1—Chilled iron, chrome plated 10" x 74"
2—Presses consisting 2 Rubber & 2 Granite Rolls, each 20" diameter x 120" face.

PULPERS
3—Dyno-Pulpers

PUMPS
1—Economy Fan Pump, 6000 g.p.m., 20' head, 50 h.p. motor.
1—Morris 10,000 g.p.m. 25 ft. head (all bronze)

REELS
1—200" Beloit Pope Reel, 72" finished roll
1—86" 2 bowl reel.
1—84" 3 bowl revolving reel.
1—100" Rice Barton 2 bowl Reel, heavy duty.
1—123" 3 bowl Revolving Reel
1—134" 2 drum
1—72" Downingtown Reel, 2 bowl.

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1—Dilts Classifiner, practically new
1—Rice Barton Dynofiner, details on request.
1—Dilts, #1 Hydrafiner, stainless steel filing, anti-friction bearings, excellent condition, including 125 h.p. motor
1—12" Wiener Refiner, with 200 h.p. motor
1—20" Sprout Waldron double disc refiner, A-F bearings with motor
1—double disc Bauer Refiner, with 2-150 h.p. motors
1—double disc Bauer Refiner, with 2-50 h.p. motors.

REGULATOR
1—Trimbey Consistency Regulator

ROLL GRINDER
1—36" Farrell Roll Grinder, 250" face

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

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4—#2A Bird Rotary Screen, copper vats.
7—Trimbey, Senior Knotter Screens
1—#2A-50 Bird, copper vat
2—APMEW Rotary Pulp Screens.

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1—42" Cameron Type 26-2A
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1—102" Cameron Type 18, 60" diameter
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SUCTION COUCH ROLL
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SUCTION FELT ROLLS
1—Gilbert & Nash 122" face
1—Beloit Rubber Covered Suction Felt Roll 109 face x 20½" diameter.

SUCTION PRESS SHELL
1—14" diameter x 100" drilled face, suction Press Shell only.

SUPER CALENDER STACK
1—9 Roll 56"

TABLE ROLLS
22—Rubber Covered 10" diameter x 246" face
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2—Iron End Vats with 36" diameter x 84" face Cylinder Molds and 20" diameter couch rolls, including spare cylinder mold and spare couch roll, all anti friction bearing equipped.

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2—72" Hudson-Sharp (Surface type winder)

TRIMMERS
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1—84" Seybold
1—36" Oswego

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1—H-3 Nash Vacuum Pump
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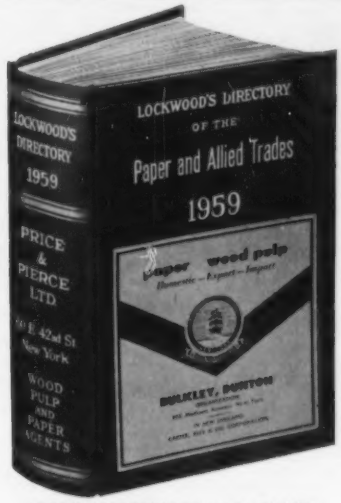

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620 Sherman Street. KEystone 4-4669

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404 Times Bldg. CA 2-5146

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HUGHES PRINTING CO.
EAST STROUDSBURG, PA.

No. 1 Requirement: *Quality*

Here's How a Mill Kept It... And Saved $.95 per Paper Ton!

Cash savings on size requirements multiplied by power savings, cleaner machines, better retention

Fine writing paper production can not take process short-cuts which affect quality . . . so this instance of Nalco Sodium Aluminate performance is more than a cost-cutting story—sheet specifications were considerably improved with Nalco 680 Sodium Aluminate—on top of all the other advantages!

Facts from Figures

This is the way the chemical costs work out on a "per ton" basis:

Size Requirements (without Nalco Sodium Aluminate)...	30.25 lb.
Size Requirements (with Nalco Sodium Aluminate)...	21.60 lb.
Pounds of Size Saved...	8.65
Alum Requirements (without Nalco Sodium Aluminate)...	40.00 lb.
Alum Requirements (with Nalco Sodium Aluminate)...	30.00 lb.
Pounds of Alum Saved...	10.00
Savings on Size (at 15.3 cents per lb.)...	$ 1.32
Savings on Alum (at 2.2 cents per lb.)...	.22
	$ 1.54
Less cost of Nalco Sodium Aluminate (at 10.7 cents per lb.)...	.59
TOTAL NET SAVING, per ton of paper	**$ .95**

Add to the dollar savings above: more fines and furnish kept in the sheet; more rapid reaction time to cut soluble alumina losses in the white water; higher pH to give means of adjusting size-alumina-pH ratio, and to cut corrosion damage; lower power requirements and cleaner machines.

Nalco Sodium Aluminate is a concentrated package of stable, soluble alumina and alkalinity that produces positive advantages all along the line!

Paper Quality Improved

Nalco Sodium Aluminate not only produces spectacular figures in processing savings, but also improved sheet specifications in the mill whose alum-aluminate costs are given above: *Size ratings jumped from a range of 45-50 up to 50-60. Ash content went from 5.6-5.8% to 7-7.1%!*

Other quality improvements include: better aging, folding endurance, burst strength, workability and reduced brittleness.

Action When It Is Needed

Results with Nalco Sodium Aluminate—and every other Nalco chemical used in paper processing—are backed by Nalco Field Service Men whose experience and willingness to help can be of real value to you . . . whether the situation calls for emergency action or long-range planning for better paper products at lowest possible production costs.

For action that leads to results like these in your mill, call your Nalco Field Service Man, or write:

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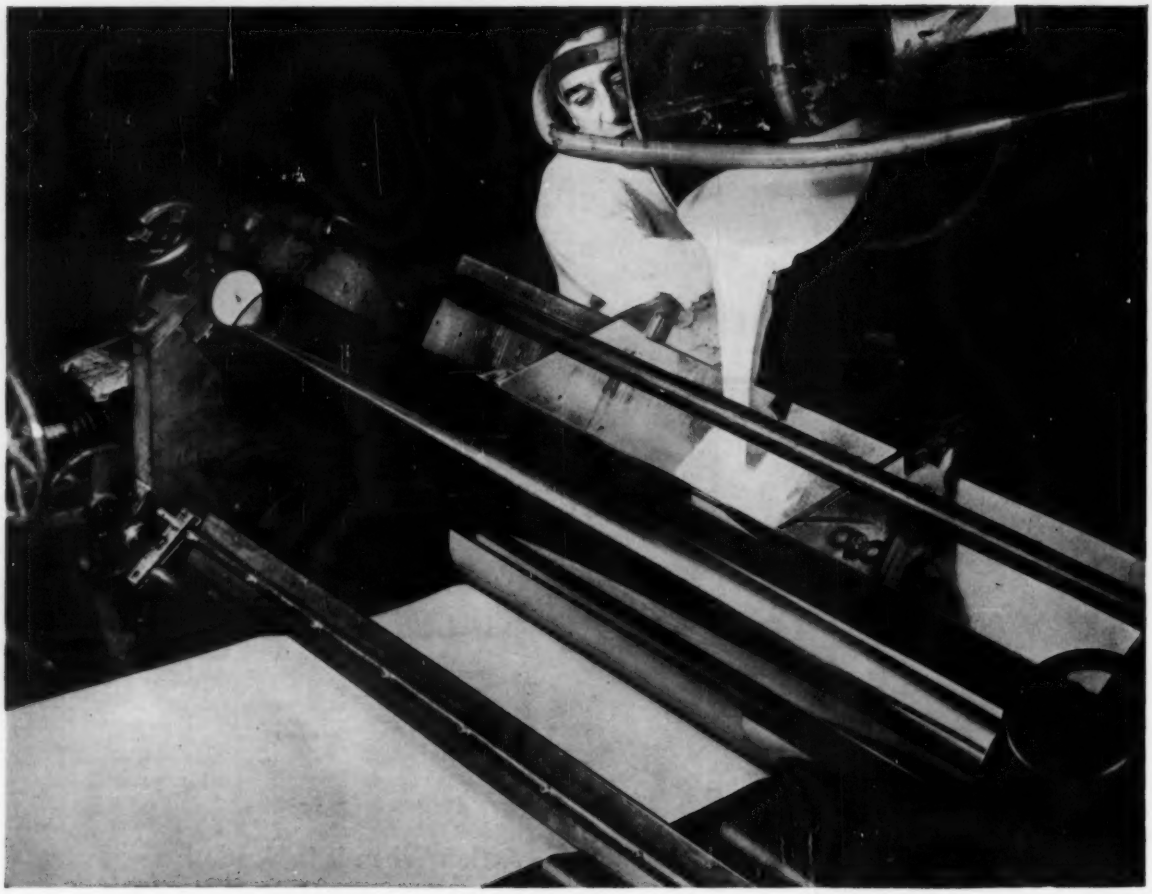

Want Bigger Dividends from Paper Stocks?

The big pay-off in paper comes when a manufacturer supplies a specific need with a new and superior product. A recent example: plasticized printing paper, a combination of paper fibers, and a CHEMIGUM LATEX by Goodyear. Perhaps you're working on a development of comparable importance right now. Could be a paper with exceptional wet-strength – or a unique texture – or unprecedented fold qualities.

Whatever your project, it will pay you substantial dividends to explore the advantages of Goodyear's three basic latices: PLIOLITE LATEX (water dispersion of styrene-butadiene rubber), PLIOVIC LATEX (water dispersion of vinyl copolymer resin), and–of course –CHEMIGUM LATEX (water dispersion of nitrile rubber). All three are available in a broad range of monomer ratios, particle sizes and types of stabilization. They can be used alone–or in combination with each other–or as modifiers of your present materials.

Among the benefits you can expect from these latices: superior oil- and grease-resistance, improved folding and bending qualities, excellent printing surface, high edge tear, added burst strength, better feel and drape.

You can also expect the finest in technical assistance when you specify a Goodyear latex. Contact your Goodyear Chemical Division Representative for all the facts. Or write for details–including latest *Tech Book Bulletins*–to Goodyear, Chemical Division, Dept. F-9427, Akron 16, Ohio.

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